READINESS AND PREPARATORY SUPPORT

MINIMUM ENERGY PERFORMANCE STANDARDS AND ENERGY LABELLING PROGRAMME LEBANON – MVE, COMPLIANCE STRATEGY

Lebanon, *"Development of Energy Efficiency Standards and Labelling program for electric motors, transformers, washing machines and TVs in Lebanon"*

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List of Abbreviation

ABC	Automatic Brightness Control
CAR	Conformity Assessment Report
COLIBAC	Lebanese Accreditation Council
DC	Direct current supply
EEI	Energy Efficiency Index
EU	European Union
Hz	Hertz
IEC	International Electrotechnical Commission
ISO	International Standards Organization
kV	Kilo volts
LIBNOR	Lebanese Standard Institution
MEPS	Minimum Energy Performance Standards
MEPL	Mandatory Energy Performance Labelling
MVE	Monitoring, Verification and Enforcement
NEMA	National Electrical Manufacturers Association
PRS	Product Registration System
SDR	Standard Dynamic Range
TENV	Totally enclosed non-ventilated
U4E	United for Efficiency
UNEP	United Nations Environment Programme
VADE	Voluntary, Assisted, Directed, Enforced

1 Executive Summary

The International Energy Agency report that best practice standards and labelling programmes can deliver a 15% national electricity consumption. Lebanon has recognised the benefits that energy efficiency standards and labelling can deliver and are pursuing a course of action to mandate standards for washing machines & washer-dryers, televisions, power distribution transformers and electric motors.

Minimum Energy Performance Standards (MEPS) and Energy Labelling have proven to drive market transformation, but their effectiveness is only maximised when complemented with robust monitoring, verification and enforcement policies and procedures. Even countries that have had MEPS and Energy Labelling programmes implemented for many years can experience issues with compliance. Therefore, it is essential to design and implement robust and appropriate monitoring, verification and enforcement regimes.

This document sets out that regulated products will be registered using an updated version of the United Nations Environment Programme (UNEP) United for Efficiency (U4E) Product Registration System (PRS). The PRS records known performance criteria of the registered products and supports the future evaluation of the programme by allowing the collection of sales data. The analysis of performance data and sales volumes will determine the long-term benefit from the introduction of MEPS and Energy Labelling in Lebanon. The PRS is the core instrument of the monitoring system.

The document also sets out general principles, strategies and guidance for undertaking compliance and enforcement activities as well as technical criteria for verification purposes.

The document also sets out a plan for Lebanon for the implementation of an appropriate MVE regime.

2 Introduction

2.1 Overview of MEPS and Energy Labelling in Lebanon

Energy-related Products (ErPs) account for a large proportion of the consumption of energy and natural resources in Lebanon. They also have a number of other important environmental impacts.

Many ErPs have a significant potential for improvement to reduce their environmental impact and achieve energy savings through better design, leading to economic savings for businesses and end-users.

The legislation on Ecodesign is an effective tool for improving the environmental performance of products by setting mandatory minimum standards for their energy efficiency. This encourages manufacturers to innovate by using more energy-efficient technologies and helps to eliminate the least efficient products from the market, thus contributing significantly to Lebanon's energy and climate targets.

The Energy Labels provide a clear and simple indication of the energy efficiency of products, based on a simple scale and other key features of products at the point of purchase. They are a key factor in helping consumers choose more energy-efficient products and save money on their energy bills.

In order to promote energy efficiency, climate change mitigation and environmental protection, Lebanon has decided to establish and apply a regulatory framework for Minimum Energy Performance Standards (MEPS) and Energy Labelling for ErPs. Four product classes have been prioritised, namely Washing Machines & Washer-dryers, Televisions, Electric Motors and Power Distribution Transformers. An overarching policy for setting MEPS and Energy Labelling requirements has been developed, together with Framework Regulations and Implementing Technical Regulations targeting the four prioritised product classes. Washing Machines (and Washer-dryers) and Televisions are subject to both MEPS and Energy Labelling requirements, while Power Distribution Transformers and Electric Motors are subject to MEPS requirements only.

It should be noted that Lebanon has already developed MEPS and Energy Labelling requirements for the following product classes: Household Refrigerators and Split Air Conditioners. However, Implementing Technical Regulations have not yet been developed for these products.

2.2 How to ensure product compliance with MEPS and Energy Labelling Legislation?

The processes for verifying product compliance with MEPS and Energy Labelling legislation comprise the following elements:

- Monitoring (also referred to as Market Surveillance);
- Verification; and
- Enforcement.

The activities designed to ensure compliance are abbreviated to "MVE" - monitoring, verification and enforcement.

2.2.1 Monitoring

Monitoring comprises the collection and analysis of data to give an accurate picture of programme progress and compliance and is usually an on-going process. It provides the opportunity to identify and act on any implementation issues, as well as providing data for programme evaluation.

A programme will need to monitor a range of requirements to be able to determine whether all its rules are being met. The requirements to provide information when a product supplier joins the programme or offers specified models for sale under the programme are referred to as Entry Conditions. Compliance monitoring that occurs once a particular product is in the retail (or wholesale) marketplace is known as Market Surveillance.

2.2.2 Verification

Verification is the process of determining whether a product performs according to its claimed energy performance values. Whether product suppliers report the energy performance of their products on entry to the programme or declare them through an energy label or by some other means, the risk of false or inaccurate declarations of product energy performance is reduced through verification testing.

Verification testing checks whether the claims made for the energy performance of individual products by their suppliers are accurate under the conditions stipulated in the programme rules.

2.2.3 Enforcement

When developing a MEPS and Energy Labelling programme, it is essential to consider not only how non-compliance will be detected, but also how it will be responded to and by whom. Enforcement is about responding to non-compliance offences with a suite of timely and appropriate actions.

When instances of non-compliance are not responded to as often or as appropriately as they should be, there are negative repercussions on the programme's integrity. If suppliers see that the penalties for non-compliance are low, then there is less motivation for them to comply, particularly if the costs of compliance are seen to be high.

Programme administrator should consider the design and implementation of procedures for responding to non-compliance offences. These procedures or strategies may include a suite or hierarchy of planned, elevating responses, and provide multiple opportunities for the offender to admit or rectify the non-compliance.

3 Monitoring

3.1 General principles and guidelines

Monitoring of MEPS and Energy Labelling programme is ensured through the programme Entry Conditions for products and the Market Surveillance of products.

The design of Entry Conditions and Market Surveillance activities needs to be adequate to track compliance with all the requirements of the programme. These do not always relate directly to energy performance, but also to processes that help to ensure the integrity of the programme, such as whether the right information has been provided by suppliers, or if labels are being placed on products correctly.

3.1.1 Entry conditions

The term 'entry condition' is used to describe specific obligations on product suppliers (manufacturers, importers, wholesalers and retailers, and in some cases, those leasing or hiring out products) to participate in MEPS and Energy Labelling programmes.

Entry conditions establish the level of assurance provided to governments that products meet the energy performance and other criteria established by a MEPS and Energy Labelling programme, and therefore play a central role in the MVE regime.

Entry conditions can also provide a robust and effective source of information to the Authority responsible for market surveillance, including:

- The number and type of products within the scope of the programme.
- The energy performance of these products.
- The sales volume or market share of models.
- The details of suppliers responsible for placing individual products on the market, providing traceability for compliance purposes.

This information is important because:

- It establishes a claim of performance for individual models that can be verified.
- Knowing what products have entered the programme enables the Market Surveillance Authority to identify products in the marketplace that may be avoiding mandatory requirements.
- Linking individual models to suppliers is vital for enforcement.
- Collecting performance data supports an evaluation of the programme's achievements - required in order to maintain the support of governments, industry and consumers.

There are costs involved in reaching higher degrees of assurance in product performance, as well as in obtaining more data. However, these data lead to greater compliance benefits and opportunities for strong programme integrity, as well as greater accuracy in evaluating and monitoring the programme. The use of different entry requirements also has a major influence on the distribution of costs amongst participants. As a result, a full examination of the costs and benefits should be taken up before a decision about entry conditions is taken, including the exploration of innovative funding approaches and ways to minimise costs.

3.1.1.1 Typical entry conditions

Entry conditions can include:

- Requirements for information about the energy performance of a product.
- Details of the supplier (the entity bringing the unit to market such as manufacturer or importer)
- Total number of sales of registered products.
- Specifications of the units being registered such as make, model, performance, technology type, dimensions, etc.

Entry conditions may require evidence of quality control or assurance.

Test reports are the most common type of performance-related entry condition. Test reports fall into two main categories: 'independent testing' or 'self-testing'. 'Independent testing' usually involves an accredited third-party laboratory conducting standardised tests to accurately measure the energy performance of a product. In the case of 'self-testing', a supplier conducts an in-house test on the appliance.

In some instances, programmes may allow information on product performance to be based on calculations (e.g. the prototype's performance based on computer modelling) or assumptions (e.g. if a lower grade product in the model range has been tested, then this result can be used). These provisions can be useful where the lowering of entry conditions is necessary, due to capacity constraints, for example. However, additional verification testing is required in these cases to ensure that programme integrity is not compromised. Where entry information is used to calculate programme impacts, the acceptance of lower grade information at the point of entry will make such estimates less accurate.

A variation on the third-party independent testing requirement is where one or more verification body is authorised to undertake the certification of products entering the programme. These bodies may be from the public, private or industry sectors, and require that certified products carry a verification mark to identify that they have met the required criteria.

In addition to requiring contact details for all suppliers, many MEPS and Energy Labelling programmes require suppliers to make a declaration that the product complies with the programme criteria. This serves to remind suppliers of the need to provide accurate information and establishes a clear link between the product and supplier which may be required to support future enforcement action.

In addition to energy performance information, there are two other common types of entry requirements:

- market information, such as the provision of sales data or market penetration figures; and
- product information, such as the provision of non-energy related specifications.

3.1.1.2 Import control, verification marks and quality control

The following three mechanisms can be used to provide additional information and controls to support a MVE regime.

3.1.1.2.1 Import controls

In some countries, any imported products that are included in a mandatory MEPS and Energy Labelling programme must be accompanied by shipment or import documentation containing information about the product's energy performance, model details, and make in order to gain entry to the country and its product market. Because this uses an already established institution and procedure, it is cost-effective to governments and reduces the overall transaction costs to suppliers.

Border controls may also be used to inform suppliers that a programme for MEPS and Energy Labelling exists in a country and that they need to meet specific requirements.

3.1.1.2.2 Verification marks

Verification marks are applied to products that have been certified for energy performance, indicating that a product has been independently sampled and tested by a verification authority to ensure it meets relevant national standards. Verification marks can be used to signify that a product meets a range of entry conditions.

Verification marks should not be confused with product labels, which provide information to consumers about the performance of an individual model. They are used primarily to provide a visual check that a product has passed a certification process, which can be helpful to market surveillance authorities.

For example, the CE marking is used to show conformity with EU regulations, including the Ecodesign Framework Directive.

3.1.1.2.3 Quality control processes

Some MEPS and Energy Labelling programmes reserve the right to conduct factory inspections as a condition of entry before a product can enter the market. Conducting a factory inspection allows the programme administrators to collect direct information about the quality control processes employed by a manufacturer, and therefore any likely variation in product performance.

3.1.1.3 Important considerations

3.1.1.3.1 The distribution of costs and benefits

The establishment for of the programme, and in particular, the entry conditions determine the requirements for financial, human, and technical resources. However, the design of the compliance regime will influence how these resource burdens are distributed between government institutions, industry participants and consumers.

One of the major design variations occur between programmes which require a product verification or certification from a qualified, third party, body as a condition for entry and programmes that allow performance to be based on in-house testing (also referred to as self-test), or a simple declaration of conformity based on calculations or other assumptions, without the need to display additional testing documentation.

Both systems can provide equivalent high levels of confidence if they are well implemented and adequately resourced. However, the first programme type is cheapest for governments to implement, with industry contributing a larger proportion of costs, which may be passed on to consumers (Table 1). In the second programme type, compliance costs to industry participants will be smaller, but the government contribution for verification testing and enforcement will need to be larger to attain the same level of compliance.

Table 1: Qualitative description of the cost impacts to stakeholders of different entry requirements.

Stakeholder	Third-party verification or certification	Self-declaration or in-house testing
Government / Programme management	Low cost of verification testing	High cost of verification testing
Industry Participant	High initial compliance costs	Lower initial compliance costs
Consumers	May fund compliance costs in price of equipment	None

In designing MEPS and Energy Labelling programmes, governments must therefore consider levels of costs to impose on other stakeholders that are both equitable and feasible. This will be a major factor in determining which basic type of entry conditions will be most viable.

3.1.1.3.2 Phased costs

All entry conditions will have short-, medium- and long-term costs associated with different phases of the MEPS and Energy Labelling programme. These include:

- **Establishment** - The programme administrator expenditure will include costs to develop, databases, online tools such as a Product Registration System (PRS), education of industry participants, and for initial data collection. Costs to suppliers depend upon the MVE regime design, as noted above.
- **Implementation** - Implementation costs, and the distribution of these costs, can vary widely depending on the MVE regime design, as noted above.
- **Monitoring and Evaluation** - Periodically there will be costs associated with the evaluation of the programme, and the review of entry conditions to ensure they are still relevant and effective.

There are opportunities for administrators to recoup some costs, for example through the collection of administrative fees for the processing of information as new products enter the programme.

3.1.1.3.3 Human resources

Human resources are required to communicate requirements, respond to inquiries, and process information on products within the programme. This may include checking technical data and/or inputting information into databases. In addition, there is a need to produce summary information for management purposes. Many of these functions can be distributed amongst staff or shared with outside contractors. However, these tasks should be well managed so that processes are undertaken diligently and with consistency.

The skills of staff and/or consultants need to be realistically assessed and recalled over the life of the programme, as a lack of appropriate human resources will quickly lead to errors and cause a loss of programme credibility. This is particularly the case in larger programmes where the numbers of product models involved is likely to be in the thousands.

It is of note that as a MEPS programme expands, the relative costs cost of adding a new product class decreases as the infrastructure, capacity, and experience are already in place and a number of activities overlap reducing the overall effort per product class. At the same time, the increased number of products in the market increases the revenue to provide a sustainable financial mechanism for the programme.

3.1.1.3.4 Technical support

Programme administrators need to assess the technical support required in relation to entry conditions. This will help governments to justify demands on industry, and to determine whether the skills required by the programme administrator can better be provided in-house or by contractors. It will also identify any major constraints in testing capacity and help to reveal the options available for increasing capacity.

In undertaking this assessment, the following list of questions should be considered:

- How much technical information is required from industry participants and in what form? What is appropriate for the programme and how it will be obtained?
- Will independent test laboratories be required? What laboratories are available domestically? Can overseas laboratories be used? Do they need to be certified? How can

laboratories become certified? How will they be funded? Will there be sufficient testing opportunities to make them commercially viable?

- Are there opportunities for self-testing? Do all suppliers (manufacturers/importers) have access to in-house laboratories?
- How will industry provide data? Are there ways to make this easier and quicker? Can reporting of energy performance be combined with other reporting requirements?
- What is the technical capacity of programme staff for the interpretation of test results or resolution of technical issues? How much technical capacity would staff actually need?
- What additional resources are needed to establish the required technical capability for the programme? Is additional staff training, industry awareness raising, test laboratory certification needed?
- Should external help be sought from contractors/experts in the field, especially in the early years of the programme?

3.1.1.4 Communication and timing

Programme administrators need to ensure that market participants are aware of their obligations. There are many risks associated with insufficient communication, including:

- A lack of compliance with entry conditions because programme participants do not know about the conditions.
- A lack of compliance because programme participants have not provided the correct information, i.e. while they knew about the entry conditions, they were not properly informed about how to fulfil their obligations.

Important issues to consider in respect to communication and entry conditions include:

- Advanced notice should always be provided when introducing new or changed entry conditions, so that all affected parties know what is expected of them and by when. The administrator should always consider phase-in periods to allow programme participants to adapt to changed entry conditions.
- Since informed participants may gain an unfair competitive advantage over those who are uninformed, particular care should be taken to communicate with all stakeholders, such as suppliers, industry associations, other relevant parties (customs or retail outlets), as well as consumers when appropriate.
- Entry conditions should be designed to avoid undue delays or impose unnecessary transaction costs, as this will deter compliance and be a barrier to entry for voluntary programmes. Consideration should therefore be given to alignment with other processes required of industry, such as import documentation and safety testing, if time and costs can be reduced.
- Working with potential or existing programme participants on the development of entry conditions can be a very useful way of ensuring that any requirements are realistic and can be met within the given time frame.

3.1.1.5 Conclusion and key messages

The entry conditions are established to ensure the integrity of the programme in that only units that that meet energy performance criteria recognised by the MEPS and Energy Labelling programme enter the market and achieve the targeted results, and therefore play a central role in the MVE regime.

Entry conditions provide an important source of information to the Market Surveillance Authority enabling it to:

- Identify products in the marketplace that are avoiding mandatory requirements.
- Link individual models to suppliers and follow through with enforcement.
- Evaluate programme achievements, which are required to maintain the support of governments, industry and consumers.

In terms of the implementation costs, it is also important to consider that although there are costs to reaching higher degrees of assurance in product performance and in obtaining more data, the benefits of higher compliance also increase to improve the programme impacts. The use of different entry requirements also has a major influence on the distribution of costs amongst participants.

Key messages from the establishment of entry requirements include

- The requirement imposed on suppliers for third-party certification or third-party test reports provides the greatest level of assurance and shifts the cost burden from governments to manufacturers; while entry requirements that lower the costs to suppliers, such as self-testing, will require larger budgets for verification testing by the authorities to reach equivalent levels of assurance.
- An assessment of the available technical capacity in support of the programme is an important step in determining which entry condition options are better tailored for its success.
- In countries with significant levels of imported products, such as Lebanon, border control authorities are essential to achieve strong compliance rates and reduce transaction costs for governments and suppliers.
- Governments need to assess and adequately fund the staff and/or consultancy resources required by programme administrators to manage entry into programmes efficiently and consistently.
- To avoid possible confusion amongst industry participants, entry conditions and programme requirements need to be socialized to all, and support for their interpretation provided by the programme administrator.
- Early consultation with suppliers (manufactures and importers) should be used to design processes that minimise transaction costs and are realistic; and to ensure that adequate warning of requirements is provided.

3.1.2 Market surveillance

3.1.2.1 Aims of market surveillance

The term market surveillance is used to describe the activities required to ensure compliance with MEPS and Energy Labelling programme conditions once products are in the marketplace. The primary aim of market surveillance is to ensure a high level of compliance with programme intent in a cost-effective way. In instances of non-compliance, market surveillance acts as the precursor to verification testing (Chapter 4) and possible subsequent enforcement (Chapter 5). It achieves this by identifying potentially non-compliant products, determining requirements for compliance testing and leveraging the costs of testing on non-compliant market participants.

Market surveillance is most readily applicable to both mandatory and voluntary labelling programmes, since these have a variety of obligations that need to be checked in the retail environment (i.e. who should apply the label on a product, how the label must look, where it is fixed, etc.). There is also a need for surveillance in the context of MEPS to ensure that all products in the marketplace are compliant with whatever entry requirements or regulatory conditions may be applicable. Where verification marks are required, these can also be observed through surveillance activities. Since market surveillance is one way to check requirements contained in the programme rules, the design of market surveillance activities will depend upon programme specific obligations, i.e. which bodies are responsible for doing what.

Even where there are no entry conditions, it is important to monitor what is in the market to highlight products whose suppliers may not be aware of MEPS or are attempting to evade the requirements.

Internet and other forms of distance selling also fall within the scope of market surveillance. With ever increasing numbers of products sold online, there is a need to both include this area within the legislative framework of MEPS and Energy Labelling programmes, and to ensure that products sold by this means are compliant.

3.1.2.2 Different types of market surveillance

3.1.2.2.1 Complaints based market surveillance

Traditionally many compliance regimes have been reactive – that is, driven by complaints from competitors, NGOs or consumers.

Complaints can provide a valuable resource to programme administrators, and successful complaint handling can be a powerful tool. Enlisting the support of competitors, the public and NGOs can significantly add to the pressure for widespread compliance, and ways to encourage their collaboration should be investigated.

But market authorities should not solely rely on tip-off information as many market participants may be reticent to lodge complaints for fear of retaliatory actions from competitors or other market participants. Therefore, market surveillance authorities should not rely solely on but devise their own procedures to carry out systematic and effective compliance checks.

Similarly, any mechanism relying on complaints must ensure that the system maintains the anonymity of the complaining party to support free and frank participation in the system, while accountability is maintained to avoid unfair complaint practices.

3.1.2.2.2 Market surveillance for Energy Labelling

Market surveillance is particularly applicable to Energy Labelling programmes since there is a significant amount of declared information provided directly on the label itself, or available indirectly via registration or self-certification schemes (subject to the specific requirements of the appropriate regulations or scheme rules). In the first instance, market surveillance comprises a check that the products shops, brochures or internet sites carry a label that is compliant with the applicable regulations or scheme rules.

The “Stage 1” check list (below) can be used by anyone carrying out this initial stage of market surveillance.

Stage 1: Market Surveillance checklist – in the shop, brochure or internet site:

- Does the product have the required label?
- Does the product identification on the label match the product to which it is attached?
- Is it displayed in the required place?
- Is the overall design e.g. colour scheme and information layout in accordance with requirements?
- Is all the required information provided?

Where necessary, and only if the staff carrying out the market surveillance has the necessary authority and the regulations or schemes are in place, there can follow a second and more demanding stage under which the registration details can be examined for completeness and can be compared to the declarations made on the label itself.

Whilst the stage 1 surveillance can be undertaken by relatively junior staff (and at low cost), application of this second stage requires greater expertise since assessing whether the specific

performance declarations are correctly applied will require the assessor to have an appropriate level of technical knowledge.

A checklist for "Stage 2" is presented below to be used when carrying out this secondary stage of market surveillance.

Stage 2: Market Surveillance checklist – comparison with declarations:

- Is this product subject to a registration requirement or file retention requirements under self-certification rules?
- Has this product been registered in accordance with the requirements?
- Upon examination, do these registration particulars appear compliant with the requirements?
- Is model correctly identified?
- Are the required performance level(s) equal to or better than the label values?
- Has testing been performed by an approved laboratory (if applicable)?

Alternatively, in cases of **self-certification**:

- Have the self-certification details been supplied in a timely manner following the registration or surveillance check request?
- Upon examination, do these registration particulars appear compliant with the requirements?
- Is model correctly identified?
- Are the required performance level(s) equal to or better than the label values?

In the case of non-compliance, each case can then be followed up independently following the enforcement mechanisms in this document. The issue of appropriate sanctions is discussed in Chapter 5 (Enforcement), however, minor infringements (or first-time offenders) are dealt with in direct coordination with the non-compliant market participant, to allow for the rectification of non-compliance and determined a course of action which may include official notifications, fines, or other sanctions that fall under administrative arrangements. In cases of mislabelled products, the evidence is usually irrefutable, and the matter solved without dispute. Only when infringements are repeated, systematic, or more severe is it necessary to escalate the response to greater sanctions.

3.1.2.2.3 Market surveillance for MEPS

Market surveillance of MEPS regimes aims to ensure that all products in the marketplace are compliant with whatever entry conditions are applicable; usually by law (e.g. compulsory registration in the Philippines, compulsory self-certification schemes in the EU leading to CE marking, etc.).

Since products subject to MEPS only are unlikely to carry performance declarations in the form of labels, market surveillance of these immediately becomes more challenging. Checks can only be carried out by accessing the necessary registration details or self-certification files. In this case, market surveillance authorities may need to devise ways of accessing files remotely, for example through handheld IT devices.

The market surveillance approach for MEPS thus largely follows the Stage 2 actions described earlier.

MEPS Market Surveillance checklist:

- Is this product subject to MEPS?
- Has this product been registered in accordance with the MEPS requirements?
- Upon examination, do these registration particulars appear compliant with the requirements?

- Is the model correctly identified?
- Are the required performance level(s) equal to or better than the MEPS?
- Has testing been performed by an approved laboratory (if applicable)?

Alternatively, in the cases of **self-certification**:

- Have the self-certification details been supplied in a timely manner following their request?
- Upon examination, do these registration particulars appear compliant with the requirements?
- Is the model correctly identified?
- Are the required performance level(s) equal to or better than the MEPS?

Greater expertise is likely to be required to carry out this checklist, since assessing whether the specific performance declarations are correctly applied will require the assessor to have an appropriate level of technical knowledge.

3.1.2.2.4 Market surveillance for distance and internet sales

One of the more challenging market segments for surveillance is that of distance selling, i.e. where the product is only available via catalogue, internet or other sales points, and where the person undertaking market surveillance may be unable to directly access the product under examination unless it is first purchased. There may be no certainty that the product supplied is the one being described, and confirmation of the identity of the product can only be established by examining its rating plate or other form of model declaration.

However, given the increasing size of this market, it is essential to develop and implement market surveillance of products from such sources. Monitoring can still be undertaken, particularly where the source of supply is within the borders to which the regulations or scheme rules apply. For example, a subset of checks from *Stages 1 and 2 Market Surveillance Checklists* (see above) can be undertaken, should the regulations require that distance sellers display label information alongside the product information they place in their catalogue or on web pages.

3.1.2.2.5 Other market surveillance activities

All the market surveillance activities described thus far have focused on monitoring the market. Some focus on prevention is also crucial in helping suppliers to understand their responsibilities for providing information labels on products, and in manufacturing and supplying products that meet or exceed a specified efficiency level. Market surveillance authorities following best practice provide training programmes in regulatory compliance for suppliers (manufacturers and importers), label interpretation for retailers, and label and standards design factors for enforcement officials.

3.1.2.3 Who should or could do it?

Market surveillance can, and often is, carried out by a number of different bodies that combine their legal powers in different part of the supply chain of the market.

3.1.2.3.1 The market surveillance authority and public bodies

This body has the official responsibility for market surveillance and, crucially, is responsible for the enforcement of any applicable regulations. The implementation of any mandatory Labelling or MEPS policy must identify such a body and ensure that it has an appropriate range of enforcement powers are vested to it. Some government funded organisations (agencies, bodies or trusts) also have a role to play in setting up MEPS and Energy Labelling programmes in partnership with interested stakeholders and carrying out the relevant market surveillance activities.

3.1.2.3.2 Trade bodies and associations or industry groups

The development of voluntary agreements (also called industry commitments) to operate Labelling or MEPS schemes is usually led by the appropriate trade body. They develop the applicable performance standards (often in partnership with government policy makers) and the scheme rules. It is their scheme, and thus their responsibility for ensuring its continuing credibility. Any voluntary agreement needs to include procedures for market surveillance, verification, and sanctions for non-compliance at a minimum. Best practice schemes, and those seeking to be recognised by authorities as suitable alternatives to mandatory regulations, would include requirements for governance by other stakeholders, such as government officials and consumer NGOs when appropriate. This provides for a level of independent verification to ensure that sufficient products are tested, enforcement actions are properly taken, and checks that the voluntary agreement effectively covers the market claimed.

Trade bodies should also be engaged as active participants of the MEPS programme supporting capacity building and information activities as well as providing feedback for the development and updating of MEPS and labels in the future.

3.1.2.3.3 Consumer organisations

The publication of test reports on products is a large part of the function of many consumer organisations. Most of these reports concentrate on performance aspects and frequently include energy efficiency amongst the results published. So long as those tests are conducted following similar methodology to that required under the relevant regulations or scheme rules, then the results, whilst falling short of verification testing, are nevertheless a useful assessment of performance for market surveillance authorities as well as for building wider awareness of surveillance activities.

Consumer organization should also be engaged as active participants of the MEPS programme supporting capacity building and information activities to consumers while also providing feedback for the development and updating of MEPS and labels in the future on behalf of consumers.

3.1.2.3.4 Retailers of own-brand products

Many of the larger retailers sell products under their own brand names, though the products are manufactured by another party. In many countries, this can mean that the retailer has legal responsibility for such products and so will be required to ensure they are correctly labelled and compliant with all other relevant legislation such as MEPS. For many retailers it is not sufficient to take the necessary steps to ensure compliance prior to first placing products onto the market. They also need their own surveillance programme in accordance with their quality assurance (QA) procedures and standards and should continue to make occasional compliance checks on production samples.

3.1.2.4 Cost effectiveness of market surveillance

Market surveillance needs to be integrated into the policy measure and ensuing regulations at the outset to ensure the seamless implementation of the programme and support cost effectiveness compliance from the market. The following activities are options that support a more seamless and cost-effective implementation of the MEPS programme:

- Suppliers register entries directly into an internet accessible database by using an online Product Registration System (PRS). This reduces administrative costs, as access costs are lower than requesting case by case details via written correspondence.
- Where self-certification regulations require the supplier to hold test results on file, these results must be available within maximum time limits, e.g. 10 working days.

- Stage 1 of label checking can be done by lower cost junior or interim staff.
- Using a systems approach to selecting the key models to check in a market surveillance operation can save substantial costs, as often different product models are based on the same basic design with only minimal cosmetic differences. Consequently, the technical details submitted at registration or otherwise held by the supplier may all be based on the original model and on which all the subsequent derivations are based. Focusing market surveillance on this original model could enable a larger number of models to be covered.
- A penalties (fines) regime may enable the authority to recover the costs of the surveillance programme.
- Having a single authority whose sole purpose is market surveillance (possibly covering areas in addition to energy efficiency), should be able to develop cost efficient procedures, and build cost saving expertise.

3.1.2.5 Procedures and system management

Establishing transparency of all actions taken by market surveillance authorities is a key priority. The basic role of the authority is that of monitoring or policing, so the authority must conduct itself in a manner that is appropriate and professional, and it must be able to defend its actions as they come under scrutiny.

The following is a non-exhaustive list of procedures that should be developed to ensure transparency and rigor:

- A procedure for selecting shops or samples to be audited. Since it is likely that only a small portion of any market can be subject to surveillance at any one time, the procedure therefore needs to record the reasons for selecting a particular portion of a particular market. (The reasons can be as diverse as: not been checked before, new entrants to market, existing poor compliance record, intelligence led, etc.
- Obtaining samples from the market can be challenging. The lowest cost way to obtain samples is to request that they be supplied by the manufacturer or importer. However, there is a risk that such a sample could be specially prepared and thus not representative of what is available in the marketplace. Furthermore, there is a possibility that samples initially identified during market surveillance may need to go forward to verification testing and eventual enforcement action. The legal requirements in such cases can be strict, with a need to ensure both a chain of custody for each sample as well as secure storage.
- Correspondence with manufacturers and suppliers needs to be undertaken in accordance with an established procedure. It is necessary to ensure that this is done in a consistent way, that complete records are kept, and that everything is done in a way that would support an enforcement action, should one eventually follow.
- As market surveillance may eventually lead to an enforcement action, it is essential that records are well maintained, with procedures established to ensure the appropriate evidence is collected correctly and that written records are made in ways that can demonstrate to a Court's satisfaction that all the appropriate procedures have been strictly followed.
- A procedure for applying administrative penalties, if applicable. This area would be particularly open to scrutiny and challenge, so an established and transparent means for deciding the level and type of penalty to apply is an essential requirement.

3.1.2.6 Linkages with other activities

Given the resource limitations under which any market surveillance activity is likely to operate, it is sensible for any authorities with overlapping responsibilities to avoid duplication by sharing of

intelligence, experience and operating plans. This is particularly applicable where the responsibility for surveillance is not centralized but is devolved to authorities at the state or regional level.

Avoiding duplication is not necessarily easy to accomplish. Some authorities may guard their intelligence for various reasons. Therefore, the process of building links may require perseverance, and should begin with low ambitions until participants have become accustomed to sharing and have gained the confidence of their fellow participants.

3.1.2.7 Appropriate sample sizes

Deciding how many samples to check can be challenging. Resource limitations and the size of the markets to be surveyed often mean that sample sizes will fall short of a statistically significant level. Therefore, difficult decisions must be made: Is it better to undertake an in-depth survey of just a part of the market (i.e. small sample size), or is it better use the same budget to undertake a less in-depth survey of a broader part of the market (i.e. a larger sample size)? The "right" answer depends upon the circumstances.

For an unknown market, it is usually more appropriate to make a shallow survey across a broad range of products. For an established market, especially where there is some intelligence about compliance problems, it may be more appropriate to study a specific area in considerable depth, e.g. focusing on particular channels or suppliers with known or suspected low compliance rates.

Any decision on sample sizes for market surveillance purposes should always be mindful of the MEPS and Energy Labelling programme's requirements for verification testing (e.g. numbers of samples needed to derive meaningful statistical results and possible prosecution), as the models selected in the first instance may then be subject to actual laboratory testing following a strict pre-established procedure and methodology standard.

Market surveillance authorities should always be conscious of the possibility of follow-up activities leading to an enforcement action being taken. This is why appropriate procedures must be developed and followed. Where the market surveillance authority is not the verification testing and/or enforcement authority, then it is essential that a formal Memorandum of Understanding (MoU) or similar agreement is developed to establish the roles and responsibilities of each of these bodies.

3.1.2.8 Reporting outcomes

Making market surveillance activities visible – through reporting them to as large an audience as possible – is essential to the success of any MVE program. Options for achieving this include:

- Production of an annual report that details levels and areas of activity and provides an overview of results obtained. It is important to report both compliance and non-compliance. Publication of the annual report ensures a transparency of operation for all stakeholders to review.
- Report results to any supplier, manufacturer, retailer or wholesaler concerned and request an action-based response where appropriate.
- Report results to the relevant Trade Association and request an action-based response where appropriate.
- Report results to the Trade Associations of the manufacturers' customers – the wholesalers and retailers.
- Publish results on a public domain website.
- Report to senior government officials, providing an opportunity to highlight the best performing suppliers or retailers.

Visible surveillance exposes risk to those suppliers who seek an unfair market advantage by not abiding by the requirements of the programme, whilst at the same time it displays support to those who do. Publishing results can also provide a benchmark.

In addition to the need for visibility, there is the need to ensure data is reported to enable formal monitoring and evaluation of the market surveillance activity.

3.1.2.9 Conclusion and key messages

- It is essential to design market surveillance strategies that systematically identify and report on non-compliance, even for what appear as minor offences, such as not correctly displaying a label. This sends a powerful message to stakeholders that non-compliance is likely to be detected.
- Market surveillance needs to be undertaken regularly and can be tailored to suit the circumstances and rules of the MEPS and Energy Labelling programme. Expert market surveillance services, NGOs and consumers can all be used to improve programme capacity in this area.
- Since market surveillance acts as the precursor to verification testing in many cases, the set of rules established and followed by the Market Surveillance Authority at this stage will impact the effectiveness of subsequent testing and enforcement actions.
- In countries with high levels of imported products, such as Lebanon, the services of border control authorities to highlight energy efficiency requirements and undertake checks on product conformity can improve compliance rates and reduce transaction costs for governments and industry.
- As the complexity of market surveillance grows, the Market Surveillance Authority should ensure that appropriate procedures and systems management are in place.
- Programme participants, industry associations, NGOs and consumers have a role to play in detecting non-compliance and should be encouraged to participate in market surveillance activities.
- The level of market surveillance checks and outline results should be shared with stakeholders and publicly reported. Detailed results of market surveillance should also be reported so long as it does not risk impacting on subsequent verification testing and possible enforcement actions.

3.2 Requirements for the Registration of Products in Lebanon

Regulated products must be registered before being sold in Lebanon, to ensure they meet Minimum Energy Performance Standards (MEPS) and Mandatory Energy Performance Labelling (MEPL) requirements.

Only local importers and manufacturers will be allowed to register products in Lebanon. A product is defined as having a brand, model number, and energy performance characteristics, etc. Products which have multiple model numbers, but have the same brand and energy performance characteristics, can be registered under one registration.

The United Nations Environment Programme (UNEP) United for Efficiency (U4E) launched a prototype national product registration system (PRS) in May 2022. This system can be adapted to register new product classes that it does not cover.

Regulated product classes in Lebanon will be registered using a customised version of the United Nations Environment Programme (UNEP) United for Efficiency (U4E) Product Registration System. The system is currently unable to accept registrations for these product classes.

The PRS is used to capture specific information on the products, including performance specifications, compliance with the MEPS and Energy Labelling legislation and evidence of

conformity. It provides an initial compliance gateway for products to enter the market. It also complements the known performance criteria with sales data, collected for the purposes of evaluation of the programme.

3.2.1 First registration

The products are registered into the Lebanese product registration system. They must comply with Lebanon's legislation for MEPS and Energy Labelling, if required. Once information about a product has been entered into the PRS, the information submitted is then approved by the Market Surveillance Authority. A key feature of this phase is the possibility to request the registration of products through a bulk upload of product data. It also allows the authority to verify that all necessary information has been provided, the data verifies that the product and any applicable fees have been paid.

The PRS will serve as a product data repository that allows for market monitoring, and a communication interface with the suppliers and government stakeholders. The PRS can also serve as an information and education conduit for consumers by allowing potential product buyers to compare the energy performance and key features of different models within a product class.

3.2.2 Registration expiry and renewal

The initial product registration is not intended to be a permanent one as the market evolves and the MEPS legislation is expected to be updated from time to time, typically making the minimum requirements more stringent. As such, it will be required for each product's registration to be renewed every 3 years to ensure continued registration. Similarly, if a registered products specifications are changed, the registration will require to be updated.

Even without regular standards updates a review of approved products is warranted to remove products no longer sold in the market to ensure the smooth functioning of the system and to disclose relevant and meaningful information to consumers.

3.2.3 Product Registration System integrity

The Market Surveillance Authority will focus on maintaining the integrity of the information contained on the PRS and take steps to provide added confidence that those who use the system in Lebanon will provide valid information and comply with the relevant standards.

Therefore, the Market Surveillance Authority may require applicants to provide it with additional evidence that the products comply with the legislated requirements prior to approval. This may include a requirement for information to be certified in the manner stipulated by the Market Surveillance Authority.

3.2.4 Registration status

Registered products will be those imported/manufactured/distributed for sale in Lebanon. The quantities of each product sold will be reported by the suppliers (manufacturers and importers) on an annual basis. As a controlling mechanism for imported products, customs department users will be able to enter imported and exported quantities of the products at the ports of entry as a separate monitoring action. Additionally, the Market Surveillance Authority will be able to perform product compliance verification through independent product performance tests, or alerts of non-compliance. Products that are found to be non-compliant would have their registration status revoked and/or receive appropriate enforcement actions. The results of these verification and enforcement activities will be documented.

3.2.5 Proposed fee schedule for the registration

The design and implementation of a comprehensive MEPS programme and the related infrastructure (such as a PRS) will incur in significant cost. It is common practice in several jurisdictions to raise funds from industry to cover these costs. Options to raise funds include the following:

- New registration fees, which last for 3 years.
- Renewal fees, after the initial 3 years.
- Levies on undesirable products or practices such as the importation of inefficient units.
- Non-compliance fines and penalties.
- Testing fees.
- Prosecution fees, etc.

The level of these fees will aim to minimize the cost of compliance but high enough to support the continued operation of the programme. The level of the fee will also vary depending on the relative complexity of assessing the product class. This approach has been applied successfully in other jurisdictions[1],[2].

A preliminary assessment of the cost of implementing a MEPS programme, excluding the costs of equipment testing and marketing, is between USD 100,000 and 150,000 per annum based on 2 to 4 full time base level employees to perform registration checks, policy analysis, reporting, market surveillance, etc. and one manager to guide the process. This estimate also allows an allowance for training and technical advice consulting.

On top of the estimate above, the estimated cost of the development of the PRS is initially estimated at USD 49,000 bringing the approximate budget to between USD 149,000 and 199,000.

It is of note that online sources of general salary levels in Lebanon may be well out of date as the economy is changing fast, and the socioeconomic situation of the country cause significant inflation. As such, these estimates may require revision.

From the initial market assessment carried out for this project, close to 500 individual models of TVs, washing machines, and motor were identified in a non-exhaustive survey. This indicates that a higher number of models are being traded in the market currently.

To cover the running costs of the program, it is proposed that the registration fee of the programme should be at least USD 500 per product to ensure that the costs cover the basic cost of running the programme over time. In other countries a schedule of costs for different operations has been generated for the operations of the MEPS programme. The proposed initial fee schedule includes:

Table 2: Initial recommended fee schedule.

Fee type	Periodicity	Fee level
Initial registration / Application of variation.	One time	USD 500
Registration renewal	Every three years	USD 500
Non-compliance notice	Only in case of non-compliance	USD 1,000

It is recommended that after two full years of operation, this schedule should be reviewed, not only to rebalance the needed fees for the system's maintenance, but also to add new types of fees that

[1] https://www.esv.vic.gov.au/industry-guidance/electrical/appliances-equipment-and-manufacurers/equipment-safety-fee-schedule

[2] https://www.energyrating.gov.au/industry-information/understand-requirements/register-product/registration-fees-and-payment

may be relevant as further enforcement actions become necessary. This may include further fines and penalties for non-compliance and even prosecution.

The proposed fee structure is projected to generate around USD 250,000 every three years based on the estimated 500 models combined between the different product classes. This will be supplemented through the registration of new models every year as well as the issuance of non-compliance fines.

3.2.6 Product data required for the registration process

The data required for the registration process is numerous and varied. It includes details of the supplier, general information about the product, test results of the product, energy performance of the product, etc.

This section provides an example of the main data required for the registration of washing machines[3].

Further details on the data required for the registration process for the four regulated product classes in Lebanon can be found in the PRS guiding document.

Supplier Details			
Supplier's name or trademark			
Supplier's type			(Manufacturer/Importer)
Phone			
Email			
Website			
Address			

Applainace General Information			
Model identifier			
Type			(Built-in/Free-standing)
Overall dimensions:			
- Height			cm
- Width			cm
- Depth			cm
Rated capacity	c		kg
Minimum duration of the guarantee offered by the supplier			months

3 Data to be filled by the user
Data calculated by the system

A = -0.0391 × c + 0.6918
B = -0.0109 × c + 0.3582
C = 1 - (A + B)

Appliance Test Results				
Energy	Energy consumption [per cycle, eco 40-60 programme] (Rated capacity)	$E_{W,full}$		kWh
	Energy consumption [per cycle, eco 40-60 programme] (Half)	$E_{W,½}$		kWh
	Energy consumption [per cycle, eco 40-60 programme] (Quarter)	$E_{W,1/4}$		kWh
	Energy consumption [per cycle, eco 40-60 programme]	$E_W = A \times E_{W,full} + B \times E_{W,1/2} + C \times E_{W,1/4}$	0	kWh
	Weighted energy consumption [per 100 cycles, eco 40-60 programme]	E_w x 100	0	kWh
	Standard energy consumption [per cycle, eco 40-60 programme]	$SCE_W = -0.0025 \times c^2 + 0.0846 \times c + 0.3920$	0,392	kWh
	Energy efficiency Index (EEI)	$EEI_W = (E_W/SCE_W) \times 100$	0	
	Energy efficiency class			(A - G)
Water	Water consumption [per cycle, eco 40-60 programme] (Rated capacity)	$W_{W,full}$		litres
	Water consumption [per cycle, eco 40-60 programme] (Half)	$W_{W,½}$		litres
	Water consumption [per cycle, eco 40-60 programme] (Quarter)	$W_{W,1/4}$		litres
	Weighted water consumption [per cycle, eco 40-60 programme]	$W_W = (A \times W_{W,full} + B \times W_{W,1/2} + C \times W_{W,1/4})$	0	litres
Washing efficiency	Washing efficiency index [eco 40-60 programme] (Rated capacity)	I_W		
	Washing efficiency index [eco 40-60 programme] (Half)	I_W		
	Washing efficiency index [eco 40-60 programme] (Quarter)	I_W		
Rinsing effectiveness	Rinsing effectiveness [eco 40-60 programme] (Rated capacity)	I_R		g/kg
	Rinsing effectiveness [eco 40-60 programme] (Half)	I_R		g/kg
	Rinsing effectiveness [eco 40-60 programme] (Quarter)	I_R		g/kg
Programme duration	Programme duration [eco 40-60 programme] (Rated capacity)	t_w		(h:mn)
	Programme duration [eco 40-60 programme] (Half)	t_w		(h:mn)
	Programme duration [eco 40-60 programme] (Quarter)	t_w		(h:mn)
Maximum temperature	Maximum temperature inside the treated load [eco 40-60 programme] (Rated capacity)	T		°C
	Maximum temperature inside the treted load inside the load [eco 40-60 programme] (Half)	T		°C
	Maximum temperature inside the treated load [eco 40-60 programme] (Quarter)	T		°C
Spin speed	Spin speed in the spinning phase [eco 40-60 programme] (Rated capacity)	S		rpm
	Spin speed in the spinning phase [eco 40-60 programme] (Half)	S		rpm
	Spin speed in the spinning phase [eco 40-60 programme] (Quarter)	S		rpm
Spin-drying efficiency	Spin-drying efficiency class			(A - G)
Remaining moisture content	Remaining moisture content [eco 40-60 programme] (Rated capacity)	D_{full}		%
	Remaining moisture content [eco 40-60 programme] (Half)	$D_{1/2}$		%
	Remaining moisture content [eco 40-60 programme] (Quarter)	$D_{1/4}$		%
	Weighted remaining moisture content	$D = [A \times D_{full} + B \times D_{1/2} + C \times D_{1/4}]$	0	%
Acoustic airborne noise	Airborne acoustical noise emissions [eco 40-60 programme] (spinning phase)			dB(A) re 1 pW
	Airborne acoustical noise emission class (spinning phase)			(A - D)
Low power modes	Off-mode power consumption (if applicable)	P_o		W
	Standby mode power consumption (if applicable)	P_{sm}		W
	Does 'standby mode' include the display of information?			(Yes/No)
	Networked standby power consumption (if applicable)			W
	Delay start power consumption (if applicable)	P_{ds}		W
	Releases silver ions during the washing cycle			(Yes/No)

Appliance Energy Performance				
Energy	Energy consumption [per cycle, eco 40-60 programme] (Rated capacity)	$E_{W,full}$		kWh
	Energy consumption [per cycle, eco 40-60 programme] (Half)	$E_{W,½}$		kWh
	Energy consumption [per cycle, eco 40-60 programme] (Quarter)	$E_{W,1/4}$		kWh
	Energy consumption [per cycle, eco 40-60 programme]	E_w	0	kWh
	Weighted energy consumption [per 100 cycles, eco 40-60 programme]	E_w x 100	0	kWh
	Standard energy consumption [per cycle, eco 40-60 programme]	SCE_W	0,392	kWh
	Energy efficiency Index (EEI)	$EEI_W = (E_W/SCE_W) \times 100$	0	
	Energy efficiency class			(A - G)
Programme duration	Programme duration [eco 40-60 programme] (Rated capacity)	t_w		(h:mn)
	Programme duration [eco 40-60 programme] (Half)	t_w		(h:mn)
	Programme duration [eco 40-60 programme] (Quarter)	t_w		(h:mn)
Maximum temperature	Maximum temperature inside the treated load [eco 40-60 programme] (Rated capacity)	T		°C
	Maximum temperature inside the treted load inside the load [eco 40-60 programme] (Half)	T		°C
	Maximum temperature inside the treated load [eco 40-60 programme] (Quarter)	T		°C
Low power modes	Off-mode power consumption (if applicable)	P_o		W
	Standby mode power consumption (if applicable)	P_{sm}		W
	Does 'standby mode' include the display of information?			(Yes/No)
	Networked standby power consumption (if applicable)			W
	Delay start power consumption (if applicable)	P_{ds}		W

Figure 1: Examples of information fields required for a registration of a products into the PRS.

4 Verification

4.1 General principles and guidelines

4.1.1 Verification regime and verification test

A verification regime is the process specified by MEPS and Energy Labelling Programmes, sometimes in legislation, to determine whether the declared energy performance of equipment available on the market is accurate. Testing normally forms the core of the determination of whether energy performance claims have been met. There are three main forms of verification testing listed below in order of ascending stringency:

- **Screening tests** in which the specified procedure may not necessarily be followed precisely, to provide a reasonable indication of energy performance at a lower cost and more quickly than in a full verification test. These tests are typically used to provide a preliminary assessment of products which are likely to fail a full verification test. Typical departures from the full procedure are that fewer replicate tests are made, laboratory or staff undertaking the tests may not be accredited, or not all of the test requirements are undertaken. These screening tests are sometimes referred to as check tests.
- **Full procedure verification tests** where the specified procedure is followed precisely in – ideally – an accredited laboratory and where all measurements and records stipulated in the procedure have been followed. Full procedure verification testing would normally be the process followed in support of subsequent enforcement action.
- **Third party certification** in which the suppliers' claim of conformity to the specified procedure is verified by an independent and competent third party.

4.1.2 Sufficient test facilities

Testing of products to MEPS and Energy Labelling Regulations necessary to ensure a successful enforcement action requires a high level of skill and access to a suitably equipped test laboratory. Consequently, such facilities are a prerequisite for any effective compliance regime. These facilities will usually exist either as government establishments or as independent commercial enterprises. It is rare that individual manufacturers' facilities will be able to satisfy requirements for independence.

The skills and equipment required to undertake tests represent a substantial financial investment and one that a commercial enterprise is unlikely to undertake without some confidence that the market for those services will be large enough to justify the investment. Therefore, it may be necessary for the MEPS and Energy Labelling Programme to identify future testing budgets and even to undertake tendering processes to encourage the development of new facilities. The choice of testing, certification, accreditation, and verification regimes may be constrained by existing legal precedents. With regards to mandatory MEPS and Energy Labelling, the programme administrator may be legally required to use a specific accreditation body or may have to implement its verification process according to an existing legal framework.

Existing testing capacity in a country may be inadequate and hence additional capacity will need to be developed. Sources of possible laboratory capacity include government regulatory or research laboratories, college/university laboratories and independent private-sector laboratories.

Where local capacity is constrained, a further option is to use the services of overseas testing facilities, and this is particularly applicable to countries with a high proportion of imported products such as Lebanon. The government can make arrangements with laboratories in the country(ies) of origin of particular products to cover the purchase and testing of selected products.

4.1.3 Competence of test facilities

Since the success of enforcement actions involving performance requirements is determined by product test results, it is essential that these results are reliable and will be found accurate if challenged. Assuming that the specified procedure is technically sound and provides acceptable levels of repeatability and reproducibility, then the best way to ensure the competence of the test laboratory is to require that it be accredited. This is a specialised process usually carried under the auspices of ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, but with reference to the specified procedure i.e. the laboratory does not receive a generic accreditation but is specifically accredited for the required procedure.

In the absence of a national accreditation body, the normal practice would be to seek accreditation from the national accreditation body of another country. Details of suitable bodies can be obtained from ILAC – the International Laboratory Accreditation Cooperation (www.ilac.org). In Lebanon, the Lebanese Accreditation Council (COLIBAC), as the national accreditation body, could play this role and accredit the testing laboratory(ies) if it has the capacity to do so or can build its capacity to do so.

Ultimately, MEPS and Energy Labelling Programme administrator can hold the threat of withdrawing accreditation from laboratories and certification authorities consistently demonstrate unreliability and inaccuracy. This is a particularly important sanction in the case of underperforming verification services, which otherwise may tend to reduce costs to attract business and hence be less rigorous in product testing.

4.1.4 Reliability of test results

Specified test procedures need to be technically sound and provide acceptable levels of repeatability and reproducibility. The use of guidance materials associated with test procedures can greatly improve reproducibility. A methodology can be used with confidence only when the results from all laboratories show an acceptable level of variability.

Ideally, though rare in practice, test methodology standards should identify all sources of uncertainties of measurement and specify maximum limit values for each of the laboratory measurements.

Assuming that the specified procedure is sound, and the laboratory is suitably accredited, then two remaining sources of data variability need to be considered:

- Manufacturing variation between different samples of the same product. Some level of performance variation between different samples is to be expected – although largely reduced by tightening production processes – and it is a task of the specified procedure to identify either a tolerance level and/or the number of replicate samples to be tested.
- Laboratory testing uncertainties. Uncertainties are defined as a parameter associated with the result of a measurement, which characterises the dispersion of the values that could reasonably be attributed to the measure.
- Laboratory uncertainties, like manufacturing variations, cannot be avoided, although they can be contained. It is the laboratories' responsibility to both minimise them and to report the maximum uncertainty of their test independent of the individual uncertainties of measurement. Maximum declared uncertainties exceeding 5% should be subject to scrutiny. To contain this potential problem, it is recommended that maximum uncertainties are agreed with the verification test laboratory before any contract is placed with them.

4.1.5 Tailoring the compliance approach to practicalities and financial resources

Full procedure verification tests vary in cost depending upon the methodology and the product under test. They can be expensive! As a result, enforcement authorities should use these types of tests prudently, where their impact is likely to be the greatest.

Enforcement authorities can use screening tests as a lower cost option to select products where enforcement action is likely. Examples of lower cost screening tests include using a reduced number of samples to be tested, e.g. one sample would need to be tested in a screening test programme, compared to the need to test four to prepare for enforcement action.

Similarly, as the results of screening testing are unlikely to be subject to the full scrutiny of the law courts, it might be possible for some of the simpler test procedures to be carried out by less well-trained staff than those employed in accredited laboratories, e.g. screening test to check whether products comply with the standby requirement are now being widely adopted worldwide using simple measuring instruments on shop floors.

Manufacturers may undertake simpler check testing of competitor products, perhaps to better understand how those competitors are achieving the levels of performance claimed or, in the case of a mis-declaration, to provide a source of intelligence to the enforcement authorities.

The selection of products with a high likelihood of failure is another means to maximise the effectiveness of testing expenditure.

4.1.6 Sampling issues

There are a number of sampling issues to consider before undertaking a verification test regime. Three aspects of good practice are usually worth following:

- Samples need to be representative of what is being supplied to the market and thus should be purchased from the market, rather than obtained directly from the supplier.
- Care should be taken when obtaining multiple samples for replicate testing to ensure that they come from different manufacturing batches. Where this is not possible to determine, it is recommended they are obtained from different outlets to reduce the possibility of testing samples with manufacturing faults that were confined to a particular batch.
- Many seemingly different models of a product may turn out to be essentially the same model with minor cosmetic differences only. The use of market research to determine whether a single model could be selected to be representative of all these different models could provide cost savings or enable a verification programme to be extended to a larger range of products.

4.1.7 Targeting issues

Effectively targeting testing is especially important when the MEPS & Energy Labelling programme deals with a vast amount of product categories, which may not all be subject to yearly compliance activities. To maximise the cost-effectiveness of testing, the programme should therefore identify products with an above average risk of non-compliance. Options for criteria to use in selecting products for testing for include:

- New market entrants
- Products from suppliers with poor records
- Information from competitors or consumers
- Sector specific targets.

Additional criteria that can be used include:

- Highest estimated energy savings
- Market share.

To avoid criticism of bias, the programme should publish guidelines detailing the criteria used for targeting products for verification tests.

4.1.8 Appropriate follow-up

The investment in verification testing is only warranted if the test results are acted upon by the relevant authorities. In most cases, the follow-up procedure undertaken as part of an enforcement or verification programme will already be defined by the applicable legalisation or the MEPS and Energy Labelling programme's administrative rules. These procedures must be followed correctly.

In the cases where there is no pre-defined procedure to be followed, then verification testing should always lead to some form of follow-on with the supplier (manufacturer or importer). This should be done regardless of whether the product was found to be in conformity with the requirements. If compliant, then the supplier is reminded that monitoring is taking place. If not in conformity, then the supplier needs not just to be informed but to be challenged as to what corrective action they intend to undertake. Under these circumstances, communication needs to be maintained until that the supplier has demonstrated that the necessary corrective action has been completed.

4.1.9 Reporting outcomes

Reporting outcomes of any screening or verification tests is an important part of the compliance regime. In addition to communication with relevant suppliers (manufacturers/importers), further reporting options include:

- Inform the respective trade associations. This should always be done regardless of whether the products were found to be in conformity with the requirements. If in conformity, then the supply side has been reminded that monitoring is taking place – something that all bona fide trade associations will welcome. Where not in conformity, then support from the trade association to ensure that corrective action is taken should be sought. Peer pressure applied through trade associations can be a very effective tool for improving conformity.
- Publish the results. This significantly increases the visibility of the verification action. It demonstrates to all stakeholders that monitoring activity is taking place and increases pressure on manufacturers and suppliers to ensure that they only market products which are in conformity with the requirements.

4.1.10 Conclusion and key messages

- Verification testing is the cornerstone of compliance: without it a products' compliance or non-compliance when in operation cannot be established.
- Even when certification processes are used, verification testing is required to check that the processes used by certification bodies are sufficiently rigorous.
- The best way to ensure the competence of any test laboratory is to require that it be accredited by a national accreditation authority.
- MEPS and Energy Labelling Programme administrators need to ensure that test methods and laboratories produce results that are repeatable and reproducible. The use of round-robin correlation tests and guidance materials associated with test procedures can greatly improve the ability to use test results for enforcement purposes.
- Samples selected for testing purposes should be purchased from the market, to be representative, and where possible from different manufacturing batches.
- Programme administrators should always consider carrying out simpler screening testing either as a precursor or instead of full verification testing. These indicate where investment in further testing is warranted.

- Ultimately, the MEPS and Energy Labelling Programme can hold the threat of withdrawing accreditation from laboratories and certification bodies that consistently prove to be unreliable and inaccurate. This is a particularly important sanction in the case of underperforming verification services, which otherwise may tend to reduce costs to attract business and hence be less rigorous in product testing.
- Programme administrators should clearly communicate details of verification testing to industry stakeholders, including the procedures used to select of products, the laboratories used for verification tests and any appeals or re-testing processes.
- Where referenced test methods provide room for interpretation, programme administrators should issue additional guidance to reduce differences in test results.
- The quantity of verification tests undertaken, and outline results should be shared with stakeholders and publicly reported. Detailed results of tests should also be reported so long as it does not risk impacting on subsequent verification testing and possible enforcement actions.
- The undertaking of the compliance testing regime is an expensive exercise and requires testing facilities that for some products will be beyond the capacity of a country to provide. Therefore, it is critical for any physical product testing to occur that a budget is allocated and either in country test facilities are funded or out-of-country testing houses are identified as suitable to complete compliance tests.
- Consideration should also be given to joining other countries to jointly fund compliance testing. Sharing the cost of testing makes it easier and cheaper for regulators and businesses trading in both countries.

4.2 Verification procedures for market surveillance of regulated product classes in Lebanon

This section outlines the specific technical requirements for conducting verification tests for the four regulated product classes in Lebanon.

4.2.1 Verification procedures for market surveillance purposes of televisions

The verification tolerances defined in Annex IV (Verification procedure for market surveillance purposes) of Technical Regulation laying down Minimum Energy Performance (Ecodesign) Requirements for Electronic Displays in Lebanon relate only to the verification by the market surveillance authority of the declared values and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in the Technical Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

As part of verifying that a product model complies with the requirements laid down in this Technical Regulation pursuant to Article 4(2) of Regulation establishing a framework for the setting of Minimum Energy Performance (Ecodesign) Requirements for Energy related Products (ErPs), the market surveillance authority shall apply the following procedure for the requirements referred to in Annex I (Definitions applicable for the Annexes) of the Technical Regulation.

4.2.1.1 General procedure

The market surveillance authority shall verify **one single unit** of the model.

The model shall be considered to comply with the applicable requirements if:

(a) the values given in the technical (declared values) and, where applicable, the values used to calculate these values are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried,

(b) the declared values meet any requirements laid down in the Technical Regulation and any product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values,

(c) when the market surveillance authority tests the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 3 (Verification tolerances) of Annex IV,

(d) when the market surveillance authority checks the unit of the model, it complies with the functional requirements and the requirements on repair and end-of-life aspects.

(e)

4.2.1.2 Verification procedure for requirements established in Annex II point B.1 of the Ecodesign Technical Regulation

The model shall be considered to comply with the applicable requirements if:

(a) The Automatic Brightness Control (ABC) of the product is enabled by default and persists in all Standard Dynamic Range (SDR) modes, except in the shop configuration,

(b) the measured ON-mode power of the product decreases by 20 % or more when the ambient light condition measured at the ABC sensor is reduced from 100 lux to 12 lux,

(c) the ABC control of display luminance meets the requirements of Annex II, point B.1(e).

The model shall be considered to comply with the applicable requirements if:

(a) the normal configuration is provided as the default choice on initial activation of the electronic display; and

(b) if the user selects a mode other than normal configuration, a second selection process is prompted to confirm the choice.

4.2.1.3 Verification procedure for requirements established in Annex II, point B.3

The model shall be considered to comply with the applicable requirements if the determined value of the peak white luminance or, if applicable, the peak white luminance ratio, meets the value required in point B.3 of Annex II.

4.2.1.4 Verification procedure for requirements established in Annex II, point C.1

The model shall be considered to comply with the applicable requirements if, when connected to the power source:

(a) the off mode and/or standby mode and/or another mode which does not exceed the applicable power demand requirements for off mode and/or standby mode, is set as default,

(b) if the unit provides networked standby mode with High Network Availability HiNA, the unit does not exceed the applicable power demand requirements for HiNA when networked standby is enabled, and

(c) if the unit provides networked standby mode without HiNA, the unit does not exceed the applicable power demand requirements without HiNA when networked standby is enabled.

4.2.1.5 Verification procedure for requirements established in Annex II, point C.2

The model shall be considered to comply with the applicable requirements if:

(a) the unit provides off mode and/or standby mode, and/or another mode which does not exceed the applicable power demand requirements for off mode and/or standby mode, when the electronic display is connected to the power source; and

(b) the activation of the network availability requires the end-user's intervention; and

(c) the network availability can be disabled by the end-user; and

(d) it complies with the requirements for standby mode when networked standby mode is not enabled.

4.2.1.6 Verification procedure for requirements established in Annex II, point C.3

The model shall be considered to comply with the applicable requirements if:

(a) within 4 hours in on mode following the last user interaction or within 1 hour if a room presence sensor is enabled and no movement is detected, the television automatically switches from on mode to standby mode or off mode or networked standby mode, if enabled, or another mode which does not exceed the applicable power demand requirements for standby mode. The market surveillance authority shall use the applicable procedure to measure the power demand after the automatic power down functionality switches the television into the applicable power mode; and

(b) the function is set as default, and

(c) in on mode, the television shows an alert message before automatically switching from on mode to the applicable mode, and

(d) if the television provides a function allowing the user to modify the 4-hour period for automatic mode transitions detailed in (a), a warning message is prompted about a potential increase in energy use and a confirmation of the new setting is requested when an extension beyond the 4-hour period or disabling is selected, and

(e) if the television is equipped with a room presence sensor, the automatic transition from on mode into any mode as detailed in (a) applies if no presence is detected for no more than 1 hour, and

(f) in televisions with various selectable input sources the power management protocols of the signal source selected is prioritised over those default power management mechanisms described in (a) above.

4.2.1.7 Verification procedure for requirements established in Annex II, point C.4

The model shall be tested for each end user selectable signal input interface type which has specified that it can carry power management control signals or data. Where there are two or more identical signal interfaces not labelled for a specific host product type (e.g., HDMI-1, HDMI-2, etc.) it is sufficient to test one of these signal interfaces selected at random. Where there are labelled or menu designated signal interfaces (e.g., computer, set top box or analogous) the appropriate host signal source device should be connected to the designated signal interface for the test. The model shall be

considered to comply with the applicable requirement if no signal by any input source is detected and the model switches into standby mode, off mode or networked standby mode.

4.2.1.8 Verification procedure for requirements established in Annex II, point D and E

The model shall be considered to comply with the applicable requirements if, when the market surveillance authority checks the unit of the model, it complies with the requirements on resource efficiency in Annex II, points D and E.

The requirements of Annex II, D.4. shall be deemed to be complied with if:

The determined value for the following Halogenated Flame Retardants (HFRs) does not exceed the corresponding maximum tolerated concentration values by weight in homogeneous materials as defined below:

(a) Lead (0.1 %)

(b) Mercury (0.1 %)

(c) Cadmium (0.01 %)

(d) Hexavalent chromium (0.1 %)

(e) Polybrominated biphenyls (PBB) (0.1 %)

(f) Polybrominated diphenyl ethers (PBDE) (0.1 %)

(g) Bis(2-ethylhexyl) phthalate (DEHP) (0.1 %)

(h) Butyl benzyl phthalate (BBP) (0.1 %)

(i) Dibutyl phthalate (DBP) (0.1 %)

(j) Di isobutyl phthalate (DIBP) (0.1 %), and

For other HFRs, the determined value for any homogenous material does not exceed 0.1 % by weight of halogen content. Where the determined value for any homogenous material exceeds 0.1 % by weight of halogen content, the model may still be considered compliant where documentary checks or any other appropriate, reproducible methods show that the halogen content is not attributable to flame retardant.

4.2.1.9 Procedure if requirements are not achieved

If the results referred to in point (c) and (d) above related to requirements not involving measured values are not achieved, the model and all equivalent models shall be considered not to comply.

If the results referred to in point 1(c) and 1(d) related to requirements involving measured values are not achieved, the market surveillance authority shall select three additional units of the same model or equivalent models for testing. The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 1 (Verification tolerances for electronic displays). Otherwise, the model and all equivalent models shall be considered not to comply.

The market surveillance authority shall use the measurement and calculation methods set out in Annex III (Measurement methods and calculations) of the Technical Regulation and only use the procedure described in points 1 and 2 for the requirements referred to in Annex IV.

4.2.1.10 *Verification tolerances*

The market surveillance authority shall only apply the verification tolerances that are set out below in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

The verification tolerances defined in Annex IV relate only to the verification of the measured parameters by the market surveillance authority and shall not be used by the manufacturer as an allowed tolerance on the values in the technical documentation to achieve compliance with the requirements. Declared values shall not be more favourable for the manufacturer than the values reported in the technical documentation.

Table 3: Verification tolerances for electronic displays.

Parameter	Verification tolerances
On mode power demand, ($P_{measured}$, Watts) excluding allowances and adjustments in Annex II, point B, for the purposes of EEI calculation set out in Annex II, point A.	The determined value (*) shall not exceed the declared value by more than 7 %
Off mode, standby mode and networked standby mode power demand (Watts), as applicable	The determined value (*) shall not exceed the declared value by more than 0.10 Watt if the declared value is 1.00 W or less, or by more than 10 % if the declared value is more than 1.00 W
Peak white luminance ratio	Where applicable, the determined value shall not be lower than 60 % of the peak white luminance of the brightest on mode configuration provided by the electronic display
Peak white luminance (cd/m2)	The determined value (*) shall not be lower than the declared value by more than 8 %
Visible screen diagonal in centimetres	The determined value (*) shall not be lower than the declared value by more than 1 cm
Screen area in dm2	The determined value (*) shall not be lower than the declared value by more than 0.1 dm2
Timed functions as set out in Annex II, points C.3 and C.4	The switch shall be completed within 5 seconds of the set-out values
Weight of plastic components as qualified in Annex II, point D.2	The determined value (*) shall not be different from the declared value by more than 5 grams
(*) In the case of three additional units tested as prescribed in Annex IV point 2(a), the determined value means the arithmetic mean of the values determined for these three additional units.	

4.2.2 Verification procedure for market surveillance purposes of Washing Machines & Washer-dryers

The verification tolerances defined in Annex 4 (Verification procedures for market surveillance purposes) of Technical Regulation laying down Minimum Energy Performance (Ecodesign) Requirements for Household Washing Machines and Household Washer-dryers in Lebanon relate only to the verification by the market surveillance authority of the declared values and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in the

Technical Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

As part of verifying the compliance of a product model with the requirements establishing a framework for the setting of minimum energy performance (Ecodesign) requirements for Energy related Products (ErPs), for the requirements, the market surveillance authority shall apply the following procedure:

4.2.2.1 General procedure

(1) The market surveillance authority shall verify **one single unit** of the model.

(2) the model shall be considered to comply with the applicable requirements if:

   (a) the values given in the technical documentation (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out, and

   (b) the declared values meet any requirements laid down in the Technical Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values, and

   (c) when the market surveillance authority checks the unit of the model, it finds that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 7 of the Technical Regulation and

   (d) when the market surveillance authority checks the unit of the model, it complies with the requirements in the third paragraph of Article 7, the programme requirements in points 1 and 2, resource efficiency requirements in point 8 and information requirements in point 9 of Annex 2 (Ecodesign requirements) of the Technical Regulation, and

   (e) when the market surveillance authority tests the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 2 (Verification tolerances for washing machines and washer-dryers).

(3) if the results referred to in point (2)(a), (b), (c) or (d) above are not achieved, the model and all equivalent models shall be considered not to comply with the Technical Regulation,

(4) if the result referred to in point (2)(e) is not achieved, the market surveillance authority shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models,

(5) the model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 2,

(6) if the result referred to in point (5) is not achieved, the model and all equivalent models shall be considered not to comply with the Technical Regulation.

The market surveillance authority shall use the measurement and calculation methods set out in Annex 3 (Measurement methods and calculations) of the Technical Regulation.

The market surveillance authority shall only apply the verification tolerances that are set out in Table 2 and shall use only the procedure described in points 1 to 6 for the requirements referred to in Annex 4. For the parameters in **Fehler! Verweisquelle konnte nicht gefunden werden.**, no other

verification tolerances, such as those set out in referenced standards or in any other measurement method, shall be applied.

Table 4: Verification tolerances for washing machines and washer-dryers.

Parameter	Verification tolerances
EW, full, EW, ½, EW,1/4, EWD, full, EWD, ½	The determined value (*) shall not exceed the declared value of EW, full, EW, ½, EW,1/4, EWD, full and EWD, ½, respectively, by more than 10 %.
Weighted energy consumption (EW and EWD)	The determined value (*) shall not exceed the declared value of EW and EWD, respectively, by more than 10 %.
WW, full, WW, ½ WW,1/4, WWD, full, WWD, ½	The determined value (*) shall not exceed the declared value of WW, full, WW, ½ WW,1/4, WWD, full and WWD, ½, respectively, by more than 10 %.
Weighted water consumption (WW and WWD)	The determined value (*) shall not exceed the declared value of WW and WWD, respectively, by more than 10 %.
Washing efficiency index (IW and Jw) at all relevant loads	The determined value (*) shall not be less than the declared value of IW, and Jw, respectively by more than 8 %.
Rinsing effectiveness (IR and JR) at all relevant loads	The determined value (*) shall not exceed the declared value of IR and JR, respectively by more than 1.0 g/kg.
Duration of the eco 40-60 programme (tW) at all relevant loads	The determined value (*) of the programme duration shall not exceed the declared value of tW by more than 5 % or by more than 10 minutes, whichever is the smaller.
Duration of the wash and dry cycle (tWD) at all relevant loads	The determined value (*) of the cycle duration shall not exceed the declared value of tWD by more than 5 % or by more than 10 minutes, whichever is the smaller.
Maximum temperature inside the laundry (T) during the washing cycle at all relevant loads	The determined value (*) shall not be less than the declared value of T by more than 5 K and it shall not exceed the declared value of T by more than 5 K.
Weighted remaining moisture content after washing (D)	The determined value (*) shall not exceed the declared value of D by more than 10 %.
Final moisture content after drying at all relevant loads	The determined value (*) shall not exceed 3.0 %.
Spin speed (S) at all relevant loads	The determined value (*) shall not be less than the declared value of S by more than 10 %.
Power consumption in off mode (Po)	The determined value (*) of power consumption Po shall not exceed the declared value by more than 0.10 W.
Power consumption in standby mode (Psm)	The determined value (*) of power consumption Psm shall not exceed the declared value by more than 10 % if the declared value is higher than 1.00 W, or by more than 0.10 W if the declared value is lower than or equal to 1.00 W.
Power consumption in delay start (Pds)	The determined value (*) of power consumption Pds shall not exceed the declared value by more than 10

	% if the declared value is higher than 1.00 W, or by more than 0.10 W if the declared value is lower than or equal to 1.00 W.
(*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.	

4.2.2.2 Multi-drum household washing machines and multi-drum household washer-dryers

For multi-drum household washing machines and multi-drum household washer-dryers, the provisions of points 1 to 6 and 9(2) of Annex 2, following the measurement and calculation methods set out in Annex 3, shall apply to any drum. The provisions of points 7, 8, 9(1) and 9(3) of Annex 2, apply to all multi-drum household washing machines and all multi-drum household washer-dryers.

The provisions of points 1 to 6 and 9(2) of Annex 2, shall apply to each of the drums independently, except when the drums are built in the same casing and can, in the eco 40-60 programme or in the wash and dry cycle, only operate simultaneously. In the latter case, these provisions shall apply to the multi-drum household washing machine or to the multi-drum household washer-dryer as a whole, as follows:

(a) the rated washing capacity is the sum of the rated washing capacities of each drum; for multi-drum household washer-dryers, the rated capacity is the sum of the rated capacities of each drum,

(b) the energy and water consumption of the multi-drum household washing machine and of the washing cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum,

(c) the energy and water consumption of the complete cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum,

(d) the Energy Efficiency Index (EEI_W) is calculated using the rated washing capacity and energy consumption; for multi-drum household washer-dryers, the Energy Efficiency Index (EEI_{WD}) is calculated using the rated capacity and energy consumption,

(e) each drum shall comply individually with the minimum washing efficiency and the minimum rinsing effectiveness requirements,

(f) each drum shall comply individually with the requirement on duration applicable to the drum with the largest rated capacity,

(g) the requirements on low power modes apply to the whole household washing machine or the whole household washer-dryer,

(h) the remaining moisture content after washing is calculated as the weighted average, according to each drum's rated capacity,

(i) for household multi-drum washer-dryers, the requirement on final moisture content after drying applies individually to each drum.

The verification procedure set out in Annex 4 applies to the multi-drum household washing machine and to the multi-drum household washer-dryer as a whole, with the verification tolerances applying to each of the parameters determined in application of this Annex.

4.2.3 Verification procedure for market surveillance purposes of Transformers

The compliance testing of distribution transformers is an expensive and not often undertaken exercise due to the cost of acquiring and testing the transformers in accredited laboratories. Australia

and New Zealand who are partners in the E3 program undertook compliance testing of transformers during 2021/2022. Twenty electricity distribution transformer models were tested by an accredited laboratory, and all meet the required MEPS. However, this was the first time the E3 programme had compliance tested transformers in the history of their program (see the below link for more info).

https://www.eeca.govt.nz/assets/Uploads/Distribution-transformer-testing-results.pdf

Given the expense involved it is not envisaged that Lebanon will have the necessary resources to undertake distribution transformer compliance testing in the foreseeable future.

Lebanon has one domestic manufacture of distribution transformers, Lebanese Electrical Services (LES). There are also other established suppliers of distribution transformers who import product from international manufacturers. They are involved in 3 phase oil filled distribution transformers manufacturing and repair from 50 to 1000KVA, 24KV. LES claim on their website to manufacture new transformers from 50 to 1000kva, 24kv, according to Electricity du Liban (EDL) technical specifications, IEC standards and other international standards, as well as any desired technical specifications. They have in house transformer design engineering, coil winding, core/coil assembly, oven drying, transformer tank manufacturing and painting.

Although it is not clear if LES hold ISO accreditation, it recommended that every supplier of distribution transformers to the Lebanon electricity network must operate a quality assurance system that complies with ISO 9000. The suppliers shall provide current certification showing the manufacturers' compliance with ISO 9000 or equivalent national standard.

4.2.3.1 Testing Procedures

In order to verify the claimed energy performance of a power transformer covered by the Regulations, the designated market surveillance authority may test any one single unit to be picked at any time directly from the premises of manufacturer or importer, at its sole discretion, according to the test method prescribed in the Regulations.

For the purpose of compliance with the requirements of the Regulations, measurements shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised best practice measurement methods.

When performing market surveillance, the designated market surveillance authority shall apply the following verification procedures for the set-out requirements:

a) The designated market surveillance authority shall test one single unit per model,

b) The model shall be considered to comply with the applicable requirements set out by the Regulations if the values in the technical documentation comply with the requirements set out in Articles 3.2 and 3.4, and if the measured parameters meet the requirements set out in Article 3.1 within the indicated verification tolerances set by IEC 60076-1,

c) If the results referred to in point (b) are not achieved, the model shall be considered not to comply with the Regulations. If a decision of non-compliance is taken, the market surveillance authority may take enforcement actions against the manufacturer and / or importer, as well as inform other authorities in the region of the decision being taken to help protect against the widespread sale of the same model.

Given the weight and size limitations in the transportation of power transformers, the designated authorities may decide to undertake the verification procedure at the premises of manufacturer(s) before they are put into service in their final destination. The verification tolerances set out in this clause relate only to the verification of the measured parameters by designated authorities and shall

not be used by the manufacturer or importer as an allowed tolerance to establish the values in the technical documentation.

Any person, persons or firm manufacturing, importing, storing for sale, supplying, selling, or distributing distribution power transformers in the scope of the Regulations, which do not meet the specified minimum energy performance requirements of the Regulations shall be liable for enforcement actions including, but not limited to warnings, sanctions, fines, penalties, public naming, delisting etc. as may be determined by the designated authority.

Further, the entity in possession of a distribution power transformer within the scope of the Regulation, other than an end-user, that does not meet the specified requirements shall ensure that it is rendered unusable and dispose of it as scrap within three months from the date that the non-conformance is first detected.

An exception shall be allowed for new distribution power transformers which have been placed on the market (i.e., supplied by a manufacturer or importer for distribution and sale) prior to the entry into force of this regulation. Existing stocks of such transformers in the distribution chain may continue to be sold even after the entry into force of this Regulation, up to a maximum period of two years or until the stocks of such transformers are exhausted, whichever is earlier.

4.2.4 Verification procedure for market surveillance purposes of Electric Motors

4.2.4.1 Testing Procedures

In order to verify the claimed energy efficiency of a motor design covered by the Regulations, the designated market surveillance authority shall test any single motor to be picked at any time directly from the market, at its sole discretion, according to the test method prescribed in the Regulations.

The motor design shall be considered to comply with the Regulations, if the measured full-load efficiency of the motor at rated voltage and rated frequency is not less than the nominal efficiency according to Article 3.1 of the Electric motors Regulations and the enforcement schedule set in Article 4, after allowing for the tolerance on the total losses according to IEC 60034-1:2022 i.e., 15% on the power range 0.75 – 150 kW and 10% on the power range 150 – 375 kW.

If the selected a motor fails this test, the market surveillance authority shall randomly test three additional motors of the same design except for motors that are produced in lower quantities than five per year.

The motor design shall be considered to comply with the provisions set-out in this Regulation, if the arithmetic average of the measured full-load efficiency of the three test motors at rated voltage and rated frequency is not less than the nominal efficiency according to Article 3.1 and enforcement schedule set in Article 4, after allowing for the tolerance on the total losses according to IEC 60034-1 i.e., 15 % on the power range 0.75 – 150 kW and 10 % on the power range 150 – 375 kW.

If this result is not achieved, the motor design shall be considered to be not in compliance with this Regulation.

If a decision of non-compliance is taken, the market surveillance authority may inform other government authorities to take enforce action against the manufacturer and / or importer, as well as inform other authorities in the region of the decision being taken to help protect against the widespread sale of the same model.

Any person, persons or firm manufacturing, importing, storing for sale, supplying, selling, or distributing electric motors within the scope of the Regulations, which do not meet the specified minimum energy performance requirements of the Regulations shall be liable for enforcement actions including, but not limited to warnings, sanctions, fines, penalties, public naming, delisting etc. as may be determined by the designated authority.

5 Enforcement

5.1 General principles and guidelines

5.1.1 What is an enforcement strategy?

An enforcement strategy is a set of responses to incidents of non-compliance, coupled with a progressive action plan for their application that should include a range of elevating enforcement responses that can be implemented depending on:

- The severity of the non-compliance.
- The range of sanctions that are available.
- The type of MEPS and Energy Labelling Programme (i.e. whether it is mandatory or voluntary).
- The quality of the evidence supporting the claim of non-compliance.
- The responsiveness of the party responsible for the non-compliance.
- The potential to rectify non-compliance.

If compliance is enforced, suppliers (manufacturers and importers) will be encouraged to comply when the potential costs of non-compliance (financial, commercial, reputational, etc) are greater than the benefits. Similarly, if suppliers consider that there is only a small chance of a transgression being discovered and that the associated penalty is also low, there will be little motivation to comply.

Enforcement, including remediation, is most effective when action is timely, i.e. responding to the detection of transgressions without undue delay.

Enforcement processes with a limited range of possible responses tend to be unwieldy and often require high levels of 'proof', which make them impractical in dealing with minor transgressions. A wider range of sanctions allows the enforcement authority to respond more quickly, is less costly, and more effective.

Where sanctions are necessary, they should be sufficient to outweigh the benefits of non-compliance in order to be an effective deterrent.

Taking enforcement action breeds compliance by elevating the perception of risk to industry participants. Only a relatively small number of major enforcement actions are required to alert industry to the ramifications of non-compliance.

Answering some basic questions will help to develop an effective enforcement strategy and highlight areas that need further information or investigation. These questions include:

- What types of non-compliance can be envisaged?
- What criteria will be used to rank types of non-compliance?
- What levels of compliance will be acceptable?
- What will be deemed as non-compliance?
- At what level of non-compliance will penalties commence and what will trigger their escalation?
- What action will be taken and by whom?

5.1.2 Types of non-compliance

Non-compliance can take numerous forms, can be the responsibility of various parties, and can occur at different stages in the MEPS and Energy Labelling Programme implementation. For example, industry participants may knowingly or unknowingly commit an offence during the manufacture, import, testing, labelling or selling of a product. Common types of non-compliance are listed as follows:

- Failure to provide an energy label or other required energy-performance rating information.

- Failure to display an energy label or other required energy-performance rating information at the point of sale, including the use of a non-conformed label or logo.
- Misuse of the logo by suppliers who are not part of a voluntary programme and do not have the authorisation to use the label.
- Failure to register a product.
- Failure to provide proof of testing.
- Failure to submit a product for testing.
- Failure to cooperate with certification or verification testing bodies.
- Falsification of a product's energy performance, resulting in misleading labelling.
- Falsification of a product's energy label or a false statement of compliance with a MEPS.
- Failure to provide required energy-performance information in product catalogues, websites or other promotional media.
- Failure to cooperate with compliance authorities.

MEPS and Energy Labelling Programmes can also have other items of potential non-compliance which are programme specific. For each of these identified categories of non-compliance, programmes need to develop a realistic and appropriate line of action.

5.1.3 Framework for an enforcement strategy

An effective enforcement regime must have the capacity to identify compliance breaches and respond with an appropriate and timely penalty. Once detected, investigation is needed to better understand the issue, identify responsible parties, and the potential for remedial action.

An enforcement regime must enable authorities to respond in a timely manner to minimise the impact of the offence on consumers and on other market participants, who might otherwise suffer from the unfair marketing of non-compliant products.

When developing an enforcement strategy that is able to quickly and adequately respond to instances of non-compliance, many issues should be considered. They include:

- Since there are many potential types of non-compliance differing in severity, there must be a matching range of appropriate responses that will act as a deterrent. There should also be multiple options for enforcement action for each type of non-compliance to allow for mild or extreme cases.
- It is important to consider the length of time taken to investigate and determine instances of non-compliance for each possible response, as this will have a bearing on the speed of reaction.
- It is also necessary to consider what level of evidence will be required to determine whether an incident of non-compliance has occurred, as this may also impact response times and costs.
- Programme administrators need to ensure that correct procedures are followed, and accurate records are kept to support enforcement actions.
- Where possible and fair, responses such as administrative sanctions, requiring a lower standard of proof by programme administrators but subject to appeal rights, may facilitate more effective resolution of non-compliance.
- Care should be taken to ensure that rights of appeal are not used to delay enforcement processes unduly.
- The opportunity for gaming and a speedier resolution of suspected cases of non-compliance can be facilitated by placing the initial onus of proof on the alleged non-complier.
- Programme administrators should consult with other compliance regimes and with industry to better understand what types of sanctions are likely to be most effective.

- The cultural and behavioural context of the programme's country may have a bearing on the responses selected. For example, in some cases the threat of 'naming and shaming' will be highly effective in deterring non-compliance, whereas financial or alternative sanctions may be more appropriate in other jurisdictions.
- Programme administrators also need to consider what existing authorities and legal powers already exist and can be used, and whether new regulations or administrative arrangements need be established to support enforcement action.
- How cases of suspected non-compliance are treated while further investigation is underway should also be addressed. There may need to be interim measures that can be used during the investigation period in cases where the impact of the transgression is severe.

5.1.4 Escalation of enforcement action

Response strategies for non-compliance can be divided based on an "enforcement pyramid," shown in Figure 2. In this case there are six courses of enforcement action. However, the number of levels can vary. The lowest level of response corresponds to the least severe transgressions and is commonly dealt with through 'informal action' beginning with remediation. In response to progressively more severe instances of non-compliance, enforcement authorities elevate their responses to a progressively higher level, ultimately reaching the most onerous sanction, which in this example is 'prosecution'.

Figure 2: Enforcement pyramid for escalating actions in case of non-compliance.

A list of responses which could be included in the hierarchy of enforcement responses (of which some can be used in tandem) includes:

- Educational initiatives.
- Warning letters.
- Informal settlements and undertakings to rectify non-complying behaviour.
- Formal court enforceable undertakings.

- Encouragement and support from other regulators (for example, a consumer protection organization) in taking action.
- Court imposed sanctions such as fines, declarations and injunctions.
- Corporate probation (like probation for individuals).
- Removal of a product from a list of qualifying products.
- Provision of compensation to consumers.
- Publication of instances of non-compliance (naming and shaming).
- Implementation of, or review and improvement to, an existing corporate compliance programme.
- Compensation to adversely affect persons or practical contribution to educational initiatives.
- Funding of educational initiative by the regulator or relevant third parties.
- Provision of relevant data and other information to assist both parties to resolve a particular matter and to assist future compliance initiatives.

MEPS and Energy Labelling Programme administrator needs to consider both the appropriate level of response for each type of transgression, and at what point to move to the next level. These decisions should be specified in the administrative rules or guidelines relating to the programme.

Some flexibility may be required, and the programme administrator may need to adjust for particular industry environments. For example, a slower level of escalation up the enforcement pyramid may be appropriate in an industry when a product is first regulated (so everyone can become informed about and become familiar with the new regulatory environment), where non-compliance is minor, or where commercial gain from the conduct is not apparent. Where non-compliance is more frequent and harmful, escalation should be correspondingly more rapid. If a banned product (i.e. not meeting mandatory MEPS) is placed on the market, the programme administrator - usually the Market Surveillance Authority - is likely to go straight to the prosecution level and skip the settlement stage.

Market characteristics will also affect the likely success of various responses. For example, in industries with easy entry and exit, where corporate reputation is relatively unimportant, or where key business decisions are made offshore, lower-level responses may not be as effective.

5.1.5 Role of informal responses

Remediation is usually the least expensive and quickest way to resolve problems and is therefore usually the first step taken by enforcement authorities.

Informal ways to address non-compliance should be part of a suite of enforcement responses. In this way enforcement authorities can usually avoid lengthy and costly legal processes. Suppliers may prefer this approach as well. Even after non-compliance has been confirmed and enforcement proceedings commenced, there should still be multiple opportunities for suppliers to admit to and rectify the non-compliance to keep costs and time (as well as penalties applied) to a minimum.

Where it is relatively straightforward to prove a case of non-compliance has occurred, it may be advantageous to use a series of pre-established fines. By using a system like this, costs and time are kept to a minimum, and the supplier is given an efficient, clear message about the penalties for offences.

Administrative Penalties, for example, are made up of a range of actions, which can include Compliance Notices and Warning Notices, as well as Fixed and Variable Financial Penalties. These can be directly and immediately applied by the enforcement authority rather than having to be taken through the criminal courts. This allows for more tailored responses, and sanctions can include requirements to compensate purchasers of products that are found to be less energy efficient than claimed.

5.1.6 When are major sanctions necessary?

It is necessary for MEPS and Energy Labelling Programmes to also have available a range of more stringent sanctions to raise the perception of risk. Even if major sanctions such as court action are used only rarely in practice, they need to represent a realistic threat to act as an effective deterrent. Once suppliers become aware that the enforcement authority is able and willing to invoke severe penalties, the need for their use will be less frequent.

Sometimes the legal basis for punishing non-compliance must be built from scratch; but it is also common that relevant legislation is already in place (e.g. for safeguarding the integrity of information provided to consumers), and non-compliance can be addressed within the framework of that existing legislation.

Non-exhaustive legal basis for enforcement action of mandatory labelling/MEPS requirements include:

- The suite of enforcement powers listed in the Framework Regulations and Implementing Regulation establishing the requirements for Energy Labelling/MEPS.
- Consumer protection law including unfair trading, false advertisement.
- Copyright law (although in the case of label misuse this implies that the label has been appropriately registered, e.g. as a trademark and only covers falsification or misuse by non-participants).

As always, the circumstance under which legal sanctions will be invoked, as well as any interim arrangements and processes, need to be specified within the MEPS and Energy Labelling Programme's administrative rules and guidelines.

5.1.7 Resource considerations

In terms of expenditure, the allocation of compliance regime resources should reflect the relative seriousness of the conduct (i.e. the harm caused by the non-compliance) and its relative frequency. Consequently, more resources should be allocated towards addressing non-compliance that causes the most impact and that occurs most frequently. However, prioritisation should not mean that no resources are allocated to low frequency and/or low impact non-compliance.

During programme implementation, the main resources required will be human and financial. Human resources could include programme staff costs to cover internal initiation, processing and follow-up of enforcement action, as well as communication of such action. Additional financial resource will most likely be needed for external specialists, such as legal advice or representation.

Pre-implementation resource requirements would be focused on enforcement regime development, and as such would include financial resources to fund internal development of the scheme but also, and importantly, funding for specialist advice or consultants relating to the development of legislation, regulation or related powers required to enact the regime; as well as the cost of legal representation if going to court.

When developing a programme, governments should consider the mechanisms and resources that will be necessary for enforcing compliance. They should also determine who is to be responsible for coordinating enforcement.

5.1.8 Importance of communication

The Enforcement Authority must ensure that efforts are taken to make suppliers aware of their responsibilities and the enforcement processes, including notifying them of any changes. Information about new or altered enforcement strategies must also be communicated to enforcement authority

staff and consultants so they are able to conduct their tasks effectively and share necessary information with their stakeholders.

Communications about the enforcement regime and of enforcement actions taken are equally important. Without communication about enforcement action, there may be no 'proof' for suppliers (manufacturers and importers) that enforcement action occurs and therefore less motivation to act in compliance with programme requirements.

Publication of enforcement action has also been proven to boost consumer confidence in MEPS and Energy Labelling programmes.

As a result, it is crucial that MEPS & Energy Labelling programmes avoid arrangements that limit their ability to publicise enforcement actions. The type of information potentially included in communications relevant to enforcement action includes:

- The number of incidents of enforcement responses over a stated period.
- The number of responses at each level of response over a stated period.
- The result of these enforcement actions, i.e. the response by suppliers.
- A listing of the brand names of products subject to enforcement action.
- A listing of model numbers of products subject to enforcement action.
- Identification of the justification for enforcement action for each brand or model.
- Identification of the energy performance of the model subject to enforcement action.

Communications may include a combination of this information.

Issues of confidentiality can arise. However, there should be no such concerns regarding the general reporting of the enforcement activities undertaken by the enforcement authority or on his behalf. This also applies to the list of responses without identification of particular brands or models. The specific situations where publication of detailed information may be inappropriate include where disclosure may jeopardise on-going or future enforcement actions, or in cultures where the naming of offenders is regarded as highly inappropriate. To deal with the diversity of information available and the concerns of stakeholders, MEPS and Energy Labelling Programmes should develop communication strategies that identify what level of information will be made available to different stakeholder groups.

5.1.9 Conclusion and key messages

- MEPS & Energy Labelling Programmes should develop an enforcement strategy that includes a range of structured, elevating enforcement responses that can be implemented depending on the type of non-compliance and the responsiveness of the transgressor.
- Enforcement, including remediation, is most effective when action is timely, i.e. responding to the detection of transgressions without undue delay, and appropriate. Where sanctions are necessary, they should be sufficient to outweigh the benefits of non-compliance.
- To minimise costs and speed up response times, strategies should include remediation and informal processes and sanctions requiring low levels of proof. However, it is necessary for programmes to have available a credible range of more stringent sanctions to raise the perception of risk.
- Where verification authorities (Market Surveillance Authorities) are used, programmes should have access to information to support enforcement, and retain the right to undertake appropriate enforcement action in support of the programme's integrity.
- Programmes should develop communication strategies that identify the appropriate type of information to be made available to different stakeholder groups.

5.2 Compliance

Compliance is of primary importance to the Market Surveillance Authority. In all cases where appropriate, the Market Surveillance Authority will assist stakeholders to comply with their obligations pursuant to the requirements of the MEPS and Energy Labelling legislation.

Compliance tools such as website information, a telephone enquiry line, periodic seminars of matters of general interest and reminder letters will be employed to educate and inform suppliers (manufacturers and importers) about their statutory obligations.

Initially, there will be an emphasis on educating users on the new legislation and the Product Registration System (PRS) requirements as they are introduced.

Where compliance is not achieved using these tools, further enforcement measures will be considered. In cases which meet the prosecution criteria set out in Lebanese MEPS and Energy Labelling legislation this will include consideration as to whether prosecution action should be taken.

5.2.1 Complaints and investigations

A complaints process will enable members of the public, importers, manufacturers, and other stakeholders to make complaints or provide information on potential breaches of legislative obligations administered by the enforcement authority.

All complaints will be considered. The enforcement authority will not investigate or act on every complaint that it receives. Further investigation decisions will be made based on factors such as the strength of the available evidence, whether the public interest requires a prosecution, the best use of available resources and the cost-effectiveness of proceeding with an investigation.

5.2.2 Compliance Management through a Risk Based Approach

Overall, compliance will essentially operate with a risk management framework – intended to influence behaviours and control risk of non-compliant products entering the market. Thus, risk management is central to a successful and cost-effective compliance strategy. An intelligence-led, risk-based approach will guide the compliance authority in choosing its compliance tools in individual cases or for segments of the regulated sector. It enables the authority to maximise its effectiveness, subject to the resources available to it.

Centring a compliance strategy around risk in turn requires the proportionate and flexible use of a range of tools for achieving compliance. The compliance authority can select appropriate measures, tailoring its compliance tools to the attitudes and capabilities of different segments of the regulated sector and the different risks that are presented. Low-level measures focused on providing accessible information and education will be cost-effective in achieving compliance for most suppliers of the regulated products. Prosecutions and other more severe enforcement tools will be necessary for individuals and businesses that deliberately choose not to comply. Intermediate actions will be available as appropriate – for example, placing conditions on the operations of a non-compliant manufacturer if the risks posed by non-compliance can be satisfactorily managed without more stringent measures. The compliance authority must be able to demonstrate to stakeholders that it is achieving its regulatory objectives and in a cost-effective manner.

The compliance authority must work with the regulated sector to develop responses that promote the desired compliance outcomes. By increasing mutual understanding and achieving ‘buy-in’ from the compliance target, the authority will be more likely to achieve high levels of compliance.

5.2.3 Voluntary, Assisted, Directed, Enforced (VADE) Compliance Model

The VADE compliance model (**Fehler! Verweisquelle konnte nicht gefunden werden.**) is a good example of bringing together a risk-based approach, proportionate responses, and collaboration in a way that ensures regulated parties know what is expected of them and get the level of support and attention necessary to maximise compliance outcomes.

5.2.3.1 Voluntary Compliance

Voluntary compliance is the primary goal of the proposed compliance regime for Lebanon. Ideally, importers, manufacturers and sellers are aware of relevant legislation and standards and voluntarily comply. The compliance focus is on informing the suppliers of the regulated products of their obligations and maintaining positive working relationships.

5.2.3.2 Assisted Compliance

Suppliers wish to comply with relevant legislation, which collectively amounts to understanding the requirements of the relevant standard but may not be sufficiently informed. The compliance approach is intended to be pragmatic, with a focus on assisting the supplier. This approach is most applicable to situations where consequences of non-compliance are not serious.

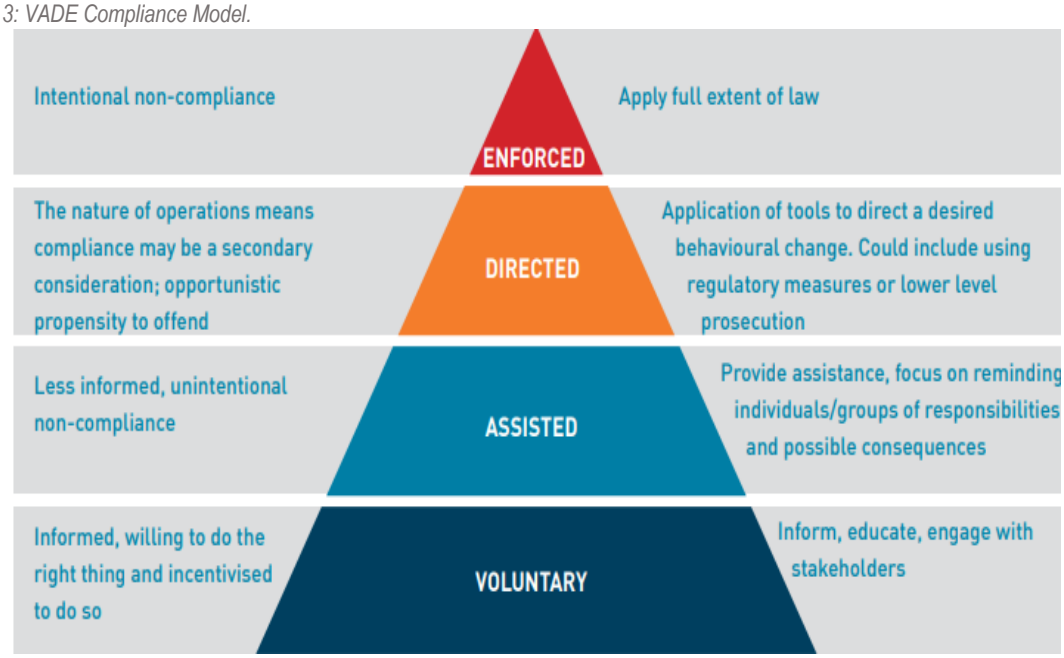
5.2.3.3 Directed Compliance

Non-compliance may be opportunistic or indifferent to the regulations. Directed compliance refers to the tools that are available to effect a desired behavioural change. Examples include being issued with a written warning or, where applicable, an infringement notice.

5.2.3.4 Enforced compliance

Enforced compliance will be used in cases where companies or individuals deliberately choose to break the law. The full extent of the law will be applied, and cases will be formally investigated with a view to prosecution. Broadly, enforcement action in the form of prosecution will only be taken in cases involving serious or repetitive offending, where there are unacceptable practices, or where prosecution is viewed as being in the public interest.

Figure 3: VADE Compliance Model.



5.3 Principles for investigating non-compliance

If there is a reason to believe that misconduct or wrongdoing has occurred, the Market Surveillance Authority must respond appropriately and promptly. When seeking compliance, the easiest and most effective way is to seek voluntary compliance. However, besides the best efforts of the Market Surveillance Authority, some product suppliers will, through neglect or wilful actions, be non-compliant with the legislation. The Market Surveillance Authority must always act consistently, in a fair manner and the response should be proportional to the seriousness of the non-compliance.

5.3.1 Effectiveness

The Market Surveillance Authority will take care to work with businesses and individuals so that they meet their legal obligations effectively and without unnecessary expense. The primary tactic is to encourage voluntary compliance using education, advice, and guidance.

The use of enforcement strategies will reflect the seriousness of the alleged offence and be appropriate to the circumstances of each investigation. The enforcement strategy selected shall produce the highest reasonable level of sustainable compliance within the least time.

5.3.2 Consistency

The Market Surveillance Authority will undertake its enforcement functions in a fair, equitable and consistent manner. Staff will exercise their professional judgment when dealing with specific issues adhering to this document, legal advice, and recognised standards to promote consistency. Consistency should have the effect of taking a similar approach in similar circumstances to achieve similar goals. The Market Surveillance Authority will liaise with other government departments and enforcement authorities to achieve the best possible outcome from an investigation.

5.3.3 Fairness

When investigating an alleged breach of the regulations, the Market Surveillance Authority and its staff will treat everybody involved fairly and respect their privacy. Investigators will seek comments

and responses from parties subject to an investigation and allow their side of the story to be heard in an objective manner. Staff will keep an open mind to all allegations of non-compliance until the facts of an investigation have been determined.

5.3.4 Proportionality

The Market Surveillance Authority will strive to minimise the costs of compliance for suppliers, importers or manufacturers by ensuring that any advice given, or action taken is proportional to the risk involved. When dealing with alleged breaches they will take account of the circumstances of each case and the attitude of the people involved, when considering a course of action.

5.4 Information required to establish an alleged breach

There are several critical areas other than the actual particulars or events of a case, where the information needs to be true and correct to select an appropriate enforcement strategy. That information includes:

5.4.1 Section of statute / Regulation / Code breached

The correct/relevant part of the MEPS and Energy Labelling legislation needs to be applied to the offence for the prosecution to proceed. It may even need to be decided if the breach falls under the jurisdiction of any national Regulations.

5.4.2 Full legal name of company

This needs to be obtained from personal within the company who are aware of the company structure and in most cases, it will involve talking to senior management. Even once the correct legal name has been obtained it will still be necessary to confirm that the information provided is true and correct with the Ministry of Justice Commercial Register.

5.4.3 Full trading name

Often companies use a trading name different from the legal name of the company. This will usually be the name they trade or advertise under.

5.4.4 Full address of registered office

As with the full company name, this will also need to be verified by doing a search of the Ministry of Justice Commercial Register.

5.4.5 Full name of person committing breach

This is needed in cases where the business is not being carried out under the name of a legal company, for instance sole suppliers, importers or manufacturers, or owner operators. The person committing the breach will usually be the person taking responsibility for the operations of the business e.g., manager or owner, etc.

The full name of the person can be obtained from that person and can usually be relied upon, however there will be circumstances where the person is unwilling to provide their correct name (e.g. Itinerant vendors). In these instances, the information may have to be found from alternative methods. Prosecutions can only be taken against a natural person or legal company. Before

proceeding with any prosecution recommendation, clearly identify the person/company who has breached the legislation and ensure that the correct details are recorded.

5.4.6 Full address of place of breach

This will usually be the trading address or the address at which the offence took place, i.e. complainant address where goods were sold or exposed for sale.

5.4.7 Defenses

Consideration must also be given to any possible defences available to the defendant and in particular, the existence of any statutory defence's available in the regulations.

5.4.8 Additional matters to consider:

5.4.8.1 Detriment

Consider the qualitative and quantitative consequences of the conduct and their impacts:

- What is the extent of the detriment (cost, quality?)
- Is the detriment to consumers or competitors?
- Is it widespread? To what extent does it apply? (often in terms of number of items sold)
- What is the range of parties affected?
- Has (or will) the conduct adversely affected competition?
- Has (or will) the conduct resulted in excess profits?

5.4.8.2 Seriousness of conduct

- How deliberate was the conduct? Was it reckless, or careless?
- Has the offending party been deceptive?
- What history of non-compliance does the offending party have?
- What compliance ethic does the offending party have? E.g., do they have a compliance programme in place?

5.4.8.3 Public interest

Does the conduct undermine public confidence in The Market Surveillance Authority or the Regulations?

- Is the offence part of a wider industry problem?
- Is it likely to be widespread public interest in the issue?
- Is there a significant need to clarify the law?

5.5 Response Strategies

The enforcement authority strategy should be underpinned by the philosophy that as far as possible; it aims to assist stakeholders and users to achieve compliance with their statutory obligations, rather than seeking to penalise them for any and every breach. It recognises that most stakeholders and users wish to comply with their obligations and seeks to overcome any obvious barriers to compliance.

In accordance with this underlying principle, the Market Surveillance Authority will use the most appropriate and cost-effective compliance tools available to it. It will establish compliance pathways which may include progressively more serious consequences for non-compliance. In cases of severe or flagrant breaches, this may include the taking of prosecution action.

Where there is a public interest in enforcement action being taken, for example because the non-compliance is serious, prolific or has caused serious financial loss to consumers, or there are persistent failures to comply with MEPS and Energy Labelling requirements, the Market Surveillance Authority will consider further enforcement measures. These may include formal warnings, the issuing of infringement notices, the suspension or cancellation of the product registration or prosecution.

There are different avenues of action available to bring about the best outcomes from identifiable breaches of the regulations:

- Informal action – discussion and persuasion
- Compliance advice letter
- Failure to comply letter (Energy Using Products only)
- Letters of warning
- Settlements
- Prosecution

5.5.1 Informal action

The purpose of informal action is to clarify or offer advice on compliance issues, trading practices and answer questions of a technical nature which could possibly lead to breaches of the regulations if not addressed promptly. It may be the case that a supplier (importer or manufacturer) is simply unaware of its legal obligations and requires access to pertinent information e.g., referral to applicable standards. Informal action involves discussion and persuasion and is primarily intended to raise awareness of the obligations of a supplier (importer or manufacturer) and motivate them to implement procedures to ensure compliance. Informal action will usually be verbal or by e-mail and may not normally be recorded.

5.5.2 Compliance advice letter

A compliance advice letter will usually be issued when minor or inadvertent breaches of the regulations are detected, usually through ignorance or misinterpretation of the regulations by a supplier (importer or manufacturer). The letter is primarily intended to raise awareness of the obligations of a supplier (importer or manufacturer) and motivate them to implement procedures to ensure compliance. Due to the risk of escalation, compliance advice letters must be recorded and maintained on file.

The letter's content should aim to:

- Be persuasive, provide possible discussion opportunities and offer educational advice.
- Inform the recipient that they may be subject to the requirements of the regulations and provide information about how they could be compliant.
- Provide links or contact details of other authorities for further reference.
- It will not threaten enforcement action.

5.5.3 Failure to comply letter

The failure to comply letter is sent to the supplier (importer or manufacturer) by the Market Surveillance Authority. The purpose of a failure to comply letter is to notify a supplier (importer or manufacturer) that a product they have registered has failed a screen test to verify compliance, provide them with options and to inform them that the failure will result in either re-testing or the removal of the product registration.

5.5.3.1 Option 1: Screen test

If the business / supplier (importer or manufacturer) accepts the result of the initial screen test, they can instruct the Market Surveillance Authority to remove the product listing from the product registration system. This means that the product can no longer be sold and to continue to do so may result in enforcement action. The supplier (importer or manufacturer) must confirm the decision in writing within 14 days.

5.5.3.2 Option 2: Additional testing - to determine whether the lot or batch of product fails to meet MEPS.

If the supplier (importer or manufacturer) requests that further testing be conducted, the business also acknowledges that this will be at its expense, that it will provide a list of serial numbers of product units which have not been sold so that the random samples required for additional testing can be selected, and that it will provide details of the total number of units sold to date. The business / supplier (importer or manufacturer) must confirm this in writing within 14 days.

5.5.3.3 Other matters the letter should cover off

- Failure to comply letters must be addressed to the person or the legal entity (company) that initially registered the product.
- Provide a copy of the Enforcement Procedures which provide information on the entire testing process along with guidelines for making submissions for a defence or disputing the testing results.
- Provide a schedule of costs incurred to date and additional costs anticipated for additional testing.
- Letter must include a date, usually 14 days in the future, when a reply is expected to be returned. If a reply is not received by that date, then the Market Surveillance Authority will be compelled to consider its enforcement options.

5.5.4 Letter of warning

The purpose of a letter of warning is to advise a supplier (importer or manufacturer)) that they have allegedly breached the regulations and that any further breaches may result in the commencement of legal proceedings.

A letter of warning will usually be issued under the following circumstances:

- Where repeated informal advice to remedy a problem(s) has been ignored and it is apparent that the supplier has chosen to disregard attempts to seek compliance through education and persuasion.
- A breach is of a relatively serious nature, but it is the supplier's first offence.

A letter of warning is discretionary and is not provided for in the regulations. It is not a prerequisite to a settlement or prosecution, nor must a verbal warning be given before one is issued; rather it is a compliance tool that is used in line with the circumstances of an alleged breach. Letters of warning shall specify the nature of the alleged breach, the evidence to support the allegation and actions the supplier must undertake to comply with the regulations.

Letters of warning must be recorded on file and should be used to determine appropriate enforcement action if further breaches by the supplier are detected. Letters must be addressed to the person or the legal entity (company) committing the alleged offence. A copy of the letter must be kept on file and if the supplier is convicted of a similar offence, it may be introduced to the court when making submissions into sentencing.

A letter of warning may be sent in the following circumstances:

- There has been a clear breach of the regulations and there is evidence to support the allegation and establish a prima facie case.
- A breach has been established but there is an impediment to proceeding with a settlement or prosecution.
- Product 'energy efficiency characteristics' don't comply with the requirements of the regulations.
- A supplier has continued to commit numerous minor technical breaches and there appears to be no attempt to initiate procedures to address the breaches.

Based on the supplier's attitude, history, and severity of the offence, it will be necessary for the individual staff member to assess whether the request for a settlement from the supplier is more appropriate.

5.5.5 Settlements

Generally, a settlement is appropriate when:

- A verbal or written warning has not occurred.
- It effects a real change in a supplier's behaviour and ensures compliance with the regulations.
- The supplier entering the settlement agrees with the evidence found during an investigation and admits that a serious breach has occurred.
- It reaches the same or better outcome than can be achieved through prosecution.
- The Market Surveillance Authority is prepared to proceed with court action if the settlement negotiations are not successful.

The settlement agreement may contain but is not limited to:

- An acknowledgment that the supplier has committed an offence for which there is a realistic prospect of conviction.
- Specify the nature of the alleged offence and the specific regulation.
- An undertaking that the supplier will not engage in any future conduct that will breach the regulations.
- An undertaking that the supplier will seek an external review of its compliance systems and report the findings within a defined period.
- Agreement on disclosure of information contained within the settlement document.

A record of the settlement will be kept on file and if the supplier is convicted of a similar offence.

5.5.6 Prosecution

The decision to commence prosecution proceedings will be made by the relevant authority following a recommendation from the Market Surveillance Authority investigating officer.

The decision to prosecute is the most important step in the prosecution process. A wrong decision, to prosecute, or not to prosecute, can undermine the reputation of the Market Surveillance Authority and confidence in the regulations.

A prosecution should not be recommended unless:

- A prima facie case has been determined and an investigation has been completed and the facts of the matter known.

- There is compelling evidence that an alleged offence has occurred, and this information has been reviewed by legal counsel who have determined that there is a reasonable prospect of a conviction being secured.
- It is in the public interest to prosecute.
- You are confident that future bargaining pressure is not the justification for recommending a prosecution.

A prosecution may be less desirable if:

- The offender is no longer trading.
- The offender has remedied the loss or harm that was caused.
- The court is likely to impose a nominal penalty.
- The offence was due to a genuine mistake or misunderstanding, e.g., no element of intent.

6 MVE Implementation Plan for Lebanon

6.1 Product Registration System (PRS)

Lebanese legislation on MEPS and Energy Labelling of Energy-related Products requires mandatory registration of products before they are placed on the market.

Products will be registered in Lebanon using an updated version of the United Nations Environment Programme (UNEP) United for Efficiency (U4E) Product Registration System. This system is currently unable to accept registrations for the product classes covered by MEPS and Energy Labelling legislation in Lebanon, namely Washing Machines & Washer-dryers, Televisions, Electric Motors, and Power Distribution Transformers. The system needs to be modified and adapted to cover these product classes.

The UNEP has provided an estimated budget of USD 49,000[4] to adapt the system to meet the needs of Lebanon. The adaptation will require software development, programming, product testing, a user manual and user training.

The PRS will be used to capture specific information on the targeted products, including performance specifications, compliance with the MEPS and Energy Labelling legislation and evidence of conformity. It will provide an initial compliance gateway for the products to enter the market. It will also complement the known performance criteria with sales data, collected for the purposes of evaluation of the MEPS and Energy Labelling of Energy-related Products programme in Lebanon.

The PRS will serve as a product data repository, allow for market monitoring, and a communication interface with the suppliers (manufacturers and importers) and government stakeholders as well as being consumer facing, by allowing potential product buyers to compare the energy performance of different models within a product class.

Products found to be non-compliant would have their registration status on the PRS revoked and/or be subject to appropriate enforcement actions.

The Market Surveillance Authority will ensure the maintaining of the integrity of the information contained on the PRS and take steps to provide added confidence that those who use the system in Lebanon will provide valid information and comply with the relevant standards.

6.2 Compliance Strategy

Lebanon will adopt and implement a compliance strategy for MEPS and Energy Labelling of Energy-related Products that is appropriate to the country context.

Prior to the adoption of mandatory MEPS for the four product classes and Energy Labelling for TV's and Washing Machines & Washer-dryers, suppliers (manufacturers and importers) will be identified and consulted with so that they understand their obligations. Stakeholders will need information on the standards to be adopted, the timing of the implementation and how to register their products in the PRS. It is likely that some initial assistance will be required to guide them through the registration process and to ensure that products are registered before the standards come into force.

The VADE compliance model is well suited to the Lebanese context and will be applied as it brings together a risk-based approach, proportionate responses, and collaboration in a way that ensures regulated parties know what is expected of them and receive the level of support and attention necessary to maximise compliance outcomes.

[4] Budget estimated as of October 2023

6.3 Monitoring

The Market Surveillance Authority responsible for implementing the monitoring strategy will be designated by the Lebanese government.

The Market Surveillance Authority requires data and information to monitor the compliance of regulated products placed on the Lebanese market with MEPS and Energy Labelling legislation in Lebanon. Product entry conditions to the programme are an invaluable source of information, enabling the Authority to identify products on the market that are avoiding mandatory requirements, link individual models to suppliers and follow through with enforcement, and evaluate programme achievements which is required in order to maintain support from government, suppliers and consumers.

An assessment of the available technical capacity in support of the programme is an important step in determining which entry condition options are better suited to the programme's success. The United Nations Environment Programme (UNEP) United for Efficiency (U4E) Product Registration System (PRS), presented above (Section 6.1), will be used as the online tool for the registration of the four regulated product classes in Lebanon.

There are significant costs associated with achieving higher levels of assurance of product performance data and with obtaining more data. In order to provide the highest level of assurance of product performance data and to shift the cost burden away from the Lebanese government, suppliers (manufacturers and importers) will be required to obtain third party certification or test reports.

The staff and/or consultancy resources required to manage entry into the programme efficiently and consistently will be assessed and adequately funded.

As regulated products in Lebanon are largely imported, the use of the border control authority will improve compliance rates and reduce transaction costs for the government and suppliers.

Early consultation with suppliers (manufactures and importers) will be used to design processes that minimise transaction costs and are realistic; and to ensure that adequate warning of requirements is provided.

The market surveillance strategy will be designed to systematically identify and report on non-compliance, even for what appear as minor offences, such as not correctly displaying the Energy Label. This sends a powerful message to stakeholders that non-compliance is likely to be detected.

Market surveillance will be undertaken regularly. It will be tailored to suit the circumstances and rules of the MEPS and Energy Labelling programme in Lebanon. Expert market surveillance services, NGOs and consumers will be used to improve programme capacity in this area.

As the four product classes covered by the MEPS and Energy Labelling legislation in Lebanon are heavily imported, the Lebanese customs services can highlight energy efficiency requirements and conduct product compliance checks, which will improve compliance rates and reduce transaction costs for the government and suppliers.

As the complexity of market surveillance grows, the Market Surveillance Authority will ensure that appropriate procedures and systems management are in place.

Programme participants, industry associations, NGOs and consumers will be encouraged to participate in market surveillance activities as they have a role to play in detecting non-compliance.

The level of market surveillance checks, and outline results will be shared with stakeholders and reported publicly. Detailed results of market surveillance will also be reported if this does not risk influencing subsequent verification tests and possible enforcement actions.

6.4 Verification

The Market Surveillance Authority responsible for implementing the verification strategy will be designated by the Lebanese government.

The Market Surveillance Authority will always consider carrying out simpler screening testing either as a precursor or instead of full verification testing. These will indicate where investment in further testing is warranted.

Full verification testing will be ensured on the basis of test verification reports provided by accredited testing laboratories. Testing laboratories in Lebanon must be accredited by the Lebanese Accreditation Council (COLIBAC).

The undertaking of the compliance testing regime is an expensive exercise and requires testing facilities that for some products would be beyond the capacity of Lebanon to provide. It is therefore essential to assess the human, technical and financial capacities of potential testing laboratories in Lebanon (e.g., IRI). It is also essential that a budget is allocated for any physical product testing that will take place, and that either in-country testing facilities are funded, and the necessary capacity building is provided, or testing houses outside of Lebanon are identified as suitable to carry out compliance testing. Consideration could also be given to joining other countries to co-fund and/or share compliance testing of product classes covered by the MEPS and Energy Labelling legislation in Lebanon. Sharing the cost of testing will make it easier and cheaper for regulators and businesses trading in these countries.

Even when certification processes are used, certification bodies must be recognised by the Market Surveillance Authority to ensure that the processes they use are sufficiently rigorous.

Capacity building of the staff of the Market Surveillance Authority will be ensured throughout the implementation of the programme.

6.5 Enforcement

The Market Surveillance Authority responsible for implementing the enforcement strategy will be designated by the Lebanese government.

An enforcement strategy appropriate to the country context will be developed. It will include a range of structured, escalating enforcement responses that can be implemented depending on the nature of the non-compliance and the responsiveness of the offender.

In order to minimise costs and speed up response times, the enforcement strategy will also include remediation and informal processes and sanctions requiring low levels of proof. However, it is necessary to have available a credible range of more stringent sanctions to increase the perception of risk. Where sanctions are necessary, they should be sufficient to outweigh the benefits of non-compliance. The enforcement strategy will be more effective if it includes sanctions.

Enforcement strategy, including remediation, is most effective when action is timely, i.e. responding to the detection of transgressions without undue delay, and appropriate.

The VADE compliance model for enforcement will be adopted as it is well suited to the Lebanese context, bringing together a risk-based approach, proportionate responses, and collaboration in a way that ensures regulated parties know what is expected of them and receive the level of support and attention necessary to maximise compliance outcomes.

Capacity building of the staff of the Market Surveillance Authority will be ensured throughout the implementation of the programme.

6.6 Capacity Building and Communication

The authority responsible for administering the MEPS and Labelling scheme in Lebanon will need to undertake awareness and education activities to inform all market participants including consumers and suppliers (importers and manufacturers) of the legislated requirements. A communications strategy has been developed addressing these needs. The following is a short summary, for more details refer to the communications strategy.

6.6.1 Consumers

The primary aim of communication strategies targeting final consumers is to raise awareness about energy efficiency issues and educate them on the practical applications of MEPS, including understanding the labelling mechanism. These strategies are designed to inform consumers about the benefits of energy-efficient products, including cost savings, reduced environmental impact, and enhanced performance. Public awareness campaigns should use diverse media channels to disseminate this information widely and effectively. Educational materials, including brochures, websites, and infographics, should clearly explain the importance of energy efficiency, the role of MEPS, and how consumers can make informed purchasing decisions based on energy performance labels.

The communication strategy will provide practical guidance on the application of MEPS in everyday life. This includes educating consumers on how to read and understand energy labels, which offer information about a product's energy consumption and efficiency rating. Interactive tools like online calculators can help consumers estimate their potential energy savings and long-term cost benefits. By providing clear, accessible, and actionable information, the strategy aims to empower consumers to make smarter, more sustainable choices, thereby driving the success of the MEPS program and contributing to broader environmental and economic goals.

Table 5: Key messages for consumer groups or audiences that influence final consumers.

Target Group	General Messages	Objective
- **Youth and students**	Adopting energy-efficient equipment represents a developed modernized community.	Educate **youth and students** to sustain the awareness gained by the end-users and to encourage TVET students to specialize in EE equipment.
	As young community leaders, you have a commitment of sharing the knowledge with your family and neighbours.	Mobilize **youth and students** as awareness-raising channels for the end-users.
- **Public opinion leaders**	Leaders will always lead their followers to adopt whatever grants benefits to them.	Support awareness raising for the public audience (end-user focus) by the **public opinion leaders.**
	As community leaders, you need to share the knowledge with your family and neighbours	Assume the role of a **public opinion leader** by assisting in disseminating the knowledge about energy-efficient equipment.
- **NGOs & CBO**	As the community's development leaders, you can spread the word about energy-efficient equipment.	Raise awareness for the public audience (end-user) through **NGOs & CBO** especially the ones dedicated to women.
	Raising awareness of women in your communities about energy-efficient equipment will support the rising awareness of the whole community.	Encourage end-users to purchase energy-efficient equipment through **NGOs & CBOs**, especially the ones dedicated to women.

- **End-users**	Energy-efficient TVs reduce your electricity consumption and the cost you pay by a percentage of (--%)[5].	Increased number of **end-users** (the two main target groups) purchasing energy-efficient equipment.
	Energy-efficient washing machines reduce your electricity consumption and the costs you pay by a percentage of (--%)[6].	
	Reduced electricity consumption guarantees the availability of energy to all Lebanese.	
	Reducing Greenhouse Gas (GHG) emissions is the responsibility of every individual to protect the future of the coming generations on this globe.	

6.6.2 Market Participants

For market participants such as manufacturers, importers, and distributors, the primary aim of the communications strategy is to ensure they understand and comply with the new regulations, while also recognizing the market opportunities presented by energy-efficient products. These strategies involve education on the specific requirements of MEPS, including the technical standards, testing procedures, and documentation needed for compliance. This can be achieved through industry workshops, detailed manuals, online portals, and direct consultations, ensuring that all participants are well-informed and prepared for the transition.

The communications strategy will also highlight the benefits of complying with MEPS for market participants, such as gaining a competitive edge by offering superior, energy-efficient products that meet consumer demand and regulatory requirements. Regular updates on regulatory changes, new standards, and best practices through newsletters, industry forums, and professional networks are essential to keep market participants engaged and proactive.

Table 6: Key messages for suppliers and related groups.

Target Group	General Line	Objective
- **Advertisement agencies**	You can be a vital partner in such a national campaign with your financial and/or in-kind contributions besides innovative contributions such as including the campaign's messages in your own campaign.	**Advertisement agencies** to join and contribute to the campaigns.
- **ALI & IRI**	Creating a demand for manufacturing energy-efficient equipment is a sign of success for your efforts.	Encourage **ALI & IRI** to raise awareness among the manufacturers about energy-efficient equipment testing to create a tendency towards manufacturing and using energy-efficient equipment
	Sharing information about the testing process will encourage manufacturers and importers to adopt energy-efficient equipment.	

[5] Exact and accurate percentage to be added

[6] Exact and accurate percentage to be added

- **Importers and sellers**	Following energy-efficient equipment rules is voluntary for a short term then it will be mandatory.	Alert the **importers and sellers** on the enforcement of energy-efficient equipment.
- **Servicing companies**	Following the rules while you have the time is much easier than being under timeframe pressure	Alert the **servicing companies** on the energy-efficient equipment to upgrade their maintenance knowledge about these devices.

7 Capacity assessment of the MEPS program MVE implementation organizations

7.1 Testing organizations

It is currently the case that existing testing organizations in Lebanon do not offer energy performance testing for energy-related products (ErPs). The principal testing organization in Lebanon is the Industrial Research Institute (IRI), which was established in 1953 as a public entity. The IRI is engaged in a range of conformity assessment activities and has been designated by the Lebanese government to conduct inspections and tests for specific imported goods. The IRI is accredited by the American National Accreditation Board (ANAB) for both ISO/IEC 17025 (testing and calibration) and ISO/IEC 17020 (inspection).

7.1.1 IRI testing facilities:

The IRI is equipped with a number of laboratories, each of which is capable of conducting a variety of different tests in accordance with the pertinent national or international standards applicable for specific imported and locally manufactured products.

The electrical laboratory, for instance, is primarily concerned with electrical safety testing, although it also performs certain basic energy measurements for specific home appliances and other ErPs. The facility is equipped with an extensive array of testing apparatus, which are employed to ascertain the technical conformity of specific imported and locally manufactured electrical products with the requirements of the pertinent national or international standards.

The mechanical engineering laboratory is equipped with the necessary apparatus to conduct a diverse range of mechanical tests and ascertain the technical conformity of specific imported and locally manufactured products with the requirements of the pertinent national or international standards.

Further investment in energy performance and water efficiency (required for washing machines and dryers) testing facilities is necessary to ensure the verification of compliance with the requirements of MEPS and Energy Labelling for televisions (TVs), washing machines (WMs), washer-dryers (WDs), electric motors, and power transformers.

7.1.2 IRI human capacity:

The IRI is supported by a dedicated team of 170 highly qualified professionals, comprising experts, specialists, and engineers proficient in various fields. The personnel include engineers and technicians who have undergone training in the use of the testing apparatus and techniques pertaining to the testing services that are offered by the institute, in addition to proficiency in energy performance assessment.

The IRI staff are duly qualified to conduct electrical and mechanical testing for a variety of home appliances, including TVs, WMs, and WDs. However, there is a need for the reinforcement of their competencies to perform tests of energy consumption, water consumption, and efficiency in accordance with MEPS and Energy Labelling requirements for WMs and WDs, as well as to perform tests of energy consumption and efficiency in accordance with MEPS and Energy Labelling requirements for TVs. Moreover, the IRI personnel possess the requisite expertise to conduct electrical safety and mechanical testing for Electric Motors and Power Transformers. However, specific training is required to gain proficiency in energy performance testing in accordance with MEPS standards for these two product categories.

In conclusion, the current human resources at IRI can barely perform the tasks assigned to them. The implementation of energy performance testing in accordance with the MEPS and Energy Labelling

requirements for the regulated ErPs would exceed the current human capacity at IRI. It is therefore necessary to enhance the capabilities of the existing personnel and, if necessary, to employ additional staff in order to fulfil the new assignments.

7.1.3 Recommendations

In order for the IRI to be able to provide testing services for the purpose of verifying compliance with MEPS and Energy Labelling requirements for the regulated ErPs, the following recommendations are proposed:

i. Testing facilities:

a. Install necessary testing equipment in order to broaden the scope of energy performance (and water efficiency testing for WMs & WDs) tests that are required for the compliance verification of MEPS and Energy Labelling requirements for TVs, WMs & WDs, Electric Motors, and Power Transformers.

b. It may be advantageous to seek financial assistance in the form of a grant from international financial institutions or international technical cooperation programmes for the implementation of the necessary testing equipment, given the considerable costs involved.

ii. Human capacity:

a. Implement a specific training programme for the IRI staff on the energy performance (and water efficiency for WMs & WDs) tests that are required for the compliance verification of MEPS and Energy Labelling requirements for TVs, WMs & WDs, Electric Motors, and Power Transformers.

b. Implement a continuous training programme to keep the IRI staff up to date with the latest testing standards and technologies related to MEPS and Energy Labelling of the regulated ErPs.

c. It may be advantageous to seek technical assistance from international technical cooperation programmes in order to facilitate the implementation of these capacity-building programmes.

iii. **Cross-cutting**:

a. In order to develop its expertise in the field of energy performance testing for ErPs and to maintain a high-quality level of testing services, it is recommended that IRI pursue opportunities for collaboration with international testing organisations, with a view to enhancing its capacity to conduct such testing.

7.2 The Lebanese Customs Agency

7.2.1 Human capacity

The Lebanese customs agency employs inspectors and officers whose responsibility it is to ascertain whether imported goods in Lebanon comply with the pertinent national laws and regulations. Such regulations include those pertaining to MEPS and Energy Labelling of ErPs.

Customs inspectors and officers have general training in inspection and verification processes. Given their previous experience in the field of home appliances, they are more familiar with TVs, WMs and WDs. Nevertheless, it is imperative that the relevant personnel receive targeted instruction on the new MEPS and Energy Labelling regulations for TVs, WMs & WDs, Electric Motors and Power Transformers. Such training should include an understanding of the energy performance requirements (and water efficiency requirements with regards to WMs and WDs) and the relevant efficiency metrics.

It is worthy of note that in the aftermath of the recent economic crisis in Lebanon, a considerable number of staff members have resigned from public-sector organizations. This has resulted in a notable shortage of personnel at the customs agency.

7.2.2 Material resources

The verification equipment available at the customs agency comprises basic inspection tools and instruments for preliminary verification and screening tests; however, it does not include dedicated equipment for energy performance verification purposes. The customs agency relies on external national testing organizations, such as the IRI, for the purpose of conducting verification tests in accordance with the applicable national and international standards.

7.2.3 Recommendations

In order for the Lebanese Customs Agency to be able to perform the requisite border control procedures for the purpose of verifying compliance of imported products with MEPS and Energy Labelling requirements for the regulated ErPs, the following recommendations are proposed:

i. **Material resources:**
   a. Procure the requisite instrumentation for the purpose of conducting on-site energy performance screening tests for regulated ErPs.
   b. Collaborate with the IRI in order to facilitate the full procedure verification tests of imported ErPs.

ii. **Human capacity:**
   a. Implement a specific training programme for customs officers and inspectors on MEPS and Energy Labelling requirements for regulated ErPs (TVs, WMs & WDs, Electric Motors, and Power Transformers) to enhance their capacity to identify non-compliant products.