The New South African Standards and Labelling Programme for Residential Appliances – A First-Hand Evaluation Case Study

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Abstract

The South African government started the development of a basic energy efficiency policy framework in 2005, including a voluntary label for refrigerators. This initial label was the intended precursor to a mandatory standards and labelling (S&L) programme, but the impacts achieved were only very limited. Based on this first experience, the South African Bureau of Standards (SABS) formed in 2008 a working group for the development of the new and more specific South African National Standard SANS 941. This standard identifies energy efficiency requirements, labelling and measurement methods as well as the maximum allowable standby power for a set of appliances as reliable basis for introducing a mandatory regulation. Nevertheless, due to many existing barriers, such as lack of funding and low priority assigned to the initiative, a very long period passed by between the S&L planning and final policy implementation. Finally, in November 2014, the South African government published mandatory performance standards coming into force in 2015/2016 for a first set of appliances consisting of refrigerators, washing machines, dryers, dishwashers, electric water heaters, ovens, A/C and heat pumps. To analyse the effectiveness of the new S&L programme and the potential influence of delays in the implementing process, the authors performed an immediate first-hand evaluation of the new policy.

As analytical reference base for available energy efficiency potentials, results from bottom-up scenario calculations will be presented exemplarily as case study for cold appliances covered by the S&L programme. A retrospective market study will show market trends before policy implementation and compare results with the new mandatory requirements. For the further policy analysis, a programme theory approach will be applied, in order to better understand why, how and under what conditions the policy works. Relationships with other energy efficiency policies and measures as well as positive or negative effects will be described. Furthermore, cause-impact relationships will be analysed to explain the functioning of the policy. Finally, success and failure factors will illustrate what needs to be done to achieve the desired energy efficiency targets. Henceforth, even though this study does not assess the direct transferability of the South African S&L programme to other regions, its findings could be relevant and useful for countries planning the implementation of similar policies.

Introduction

Due to widely and cheaply available coal resources in South Africa, the country was traditionally able to generate electricity at very low prices, leading to electricity tariffs amongst the lowest in the world in the past. However, in recent years the country had to deal with severe bottlenecks in the supply of electricity due to rising overall energy demand in combination with an aging, error-prone electric power grid. Peak loads often exceed available generation capacities and related power blackouts remain persistent. Concerns and prices subsequently increased (Covary, Götz & du Preez 2014). In this context, the South African government has defined the aim to make the energy market more sustainable to guarantee energy security and emission reductions by focussing more on renewable energies and energy efficiency. For this purpose, the South African government adopted the "National Energy Efficiency Strategy" (NEES) in 2005 as well as the "Electricity Regulation Act" in 2008 to promote energy efficiency and to minimize energy consumption. Among other aspects, the NEES defined a national voluntary target for energy efficiency improvement of 12 % by 2015 compared to a 2000 baseline, as well as sector-specific targets, e.g. for residential appliances.

The current status of Standards and Labelling in South Africa

Dating back to 1998, the South African Energy Strategy identified for the first time appliances as highly relevant to achieve energy savings in the residential sector. In 2005 the country's first National Energy Efficiency Strategy was developed and in the same year the Department of Minerals and Energy (now Department of Energy, DOE) introduced a voluntary labelling scheme, which was the planned precursor to a mandatory Standards and Labelling (S&L) programme. It was decided to adopt the EU energy label format, largely because the majority of South Africa's appliances were imported from Europe. The derived label included some minor changes to the EU label being in use at the time of the South African programme design, most notably a star with the colours of the South African national flag. This label was registered with the relevant national and international authorities.

The voluntary scheme targeted directly only refrigerators. Therefore, the original objective was to extend the new South African label also to other large and relevant household appliances, such as washing machines, dishwashers and dryers. However, there was no subsequent and seamless implementation towards a stringent mandatory S&L programme, and consequently this early voluntary approach was soon forgotten and abandoned by manufacturers and retailers. In order to overcome this situation, in 2007 the South African DOE and the United Nations Development Programme (UNDP) country office submitted a joint application to the Global Environment Facility (GEF) for financial support in order to implement a mandatory S&L programme (UNDP 2016). Following this, the South African Bureau of Standards (SABS) formed the Working Group 941 in 2008 with the mandate to develop the South African National Standard "SANS 941 - Energy Efficiency for Electrical and Electronic Apparatus". As result, SANS 941 identified energy efficiency requirements, energy efficiency labelling, measurement methods and the maximum allowable standby power for a set of appliances to form the basis for a mandatory regulation.

Furthermore, South African testing standards were developed, adopting existing International Electrotechnical Commission (IEC) standards. Accordingly, also the establishment of independent test facilities has been initialized.

However, due to lack of funding and other policy priorities, it took significant additional time between the original planning of the S&L programme and the actual implementation. Finally, the South African Minister of Trade and Industry published the 'Compulsory Specification for Energy Efficiency and Labelling of Electrical and Electronic Apparatus' on 28 November 2014 (Government of South Africa 2014) and subsequently the first mandatory standards came into force in 2015. The defined minimum energy performance standards (MEPS) levels were based on the findings of ex-ante impact assessment studies as well as stakeholder consultations with manufacturers, retailers and consumer groups (incl. studies on consumer response of the label, current efficiency level of local and imported appliances). The impact assessment analysed also the industry supply chain, local manufacturing, importers and retailers, as well as incentives and risks (Covary 2013).

As result, the first covered set of appliances includes refrigerators, washing machines, dryers, dishwashers, electric water heaters, ovens, A/C and heat pumps. Furthermore, the South African S&L project team is also deliberating whether to make changes to the existing label in line with the upgrades made to the EU label, which makes greater use of pictograms rather than text. The background is a focus group interview conducted in 2012, which also analysed the consumer understanding of the existing label in South Africa and came to the result that consumers support the label in general but do not understand every word or technical term used on the label (Covary 2012).

Finally, about one year after the start of MEPS, this paper targets to provide a first evaluation of the new S&L programme to analyse the actual effectiveness and the potential influence of delays and inherent peculiarities in the policy implementing process in South Africa.

Design and implementation theory for S&L programmes

A wide variety of methods can be found in literature to design, implement and evaluate EE policies and measures. In this chapter, a transition cycle approach with a special focus on monitoring and evaluation is used for the analytical framework. The general approach of the transition cycle and the specific role of programme theory were already developed by Wuppertal Institute and other partners within the AID-EE (2008) project. For the purposes of this paper the transition cycle approach will be further developed and adapted to S&L programmes. The method provides insights as to why a policy is succeeding or failing, and where the policy should be improved. This is relevant to overcome existing barriers and to amend policies.

The following figure 1 schematically illustrates the prototypical step-by-step approach of how to design, implement and review S&L programmes according to the transition cycle. The left column shows necessary ‘steps’ to implement a successful S&L policy and the middle column in grey indicates the ‘phases’ for monitoring and evaluation activities.

The approach starts with the policy formulation (Step 1), including the description of targets, a realistic timeframe and the required budget. All relevant actors like manufacturers, retailers, NGOs, and their specific positions should be analysed to develop a policy that overcomes existing barriers and strengthens incentives. A competent and independent public authority should be appointed and sufficient staff should be seconded to coordinate and implement effectively all policy steps. The policy formulation should be continued by working plans to define criteria for the selection of product groups, with a priority for product groups with the highest saving potentials.

Product-specific preparatory studies (Step 2) should analyse market data, consumer behaviour aspects, the technological status, cost estimations, environmental effects, and energy efficiency potentials. This is relevant for the ex-ante impact assessment of energy savings and related costs and also for the forthcoming monitoring process and future ex-post impact evaluations.

In parallel to Step 1 and 2, a programme theory should be established as starting point for monitoring and evaluation activities (Phase A), including all aspects how the policy instrument should reach its targeted impact. Thereby, programme theory uses three components: the inputs, the outcomes and the mechanisms through which the intended outcomes are achieved. For this purpose, the policy should be clearly described before it is implemented, covering cause-impact relationships, success and failure factors and the relation with other instruments. Ideally, quantitative key performance indicators (KPI) should be formulated to assess each cause-impact relation and to measure whether the steps took place (input for Phase B). The definition of KPIs also includes formulas to calculate the baseline, the impact of the policy and the cost-effectiveness. The indicators should be made visible in a flowchart (Harmelink et al. 2008, and see also an example of a flowchart in figure 2).

The following Step 3 includes the development of test procedures and laboratory services, in accordance with international standards. A verification and compliance regime should be in place to ensure that standards are met or that e.g. the label shows correct information (CLASP 2005).

The actual standard setting and the design of energy labels characterize Step 4. Procedures for defining standard levels should allow an open discussion with review and revision stages. Typically statistical methods are used to define requirements. Often the energy efficiency level of appliances already on the market is used as basis and the standard is designed to improve the energy efficiency of the average appliance on the market by e.g. 10 or 20 %. Another method is to base regulations on cost benefit evaluations and the identified energy efficiency level with least lifecycle costs (LLCs). Further refined impact assessments and discussions with relevant stakeholders follow as next step to find a well-balanced compromise between contrary opinions. Timeframes for the introduction of S&L and also for the next revisions should already be established in this Step 4 (bigEE 2012). Regarding the design of the label some basic questions should be answered: Shall the label be an endorsement or comparative label and shall the label be mandatory or voluntary? Afterwards, energy efficiency requirements and the actual design of the label (e.g. A-G scheme, five star system) can be established. A consumer behaviour study helps to decide whether end-users understand the proposed label or not.

During the policy implementation (Step 5, policy in practice), an effective monitoring system should be established to follow and control the process. To identify problems (Phase C), a dedicated process evaluation assists to analyse programme performance more systematically and at longer intervals than the continuous monitoring. Process evaluations can provide in-depth insights in whether a policy performs as expected, e.g. in the original programme theory (bigEE 2013). This does not only relate to the energy performance, but also to other relevant aspects like the correct display of the label.

Step (6) complements S&L with other policy measures like communication campaigns to inform consumers about the new standards and the labelling design. Financial incentives as "pull factor" can incentivize consumers to buy the most efficient BAT (best available technology) products. After a defined period of time, an ex-post impact evaluation should be conducted (Phase D) to reveal if the policy has achieved its original targets. It compares the actual impacts with the previously calculated potentials (cost savings, energy savings, policy acceptance, etc.). Positive and negative side effects like rebound, free-rider or spill-over effects should also be considered.

Overall, S&L programmes are typically developed for a long-term period. To remain effective, policies require a periodic review with update procedures (Step 7). Therefore, MEPS should be reformulated and tightened regularly so that inefficient products will continuously disappear from the market. The label should also be revised regularly to guarantee that the best category is only available for the best not yet available technology (BNAT). This underlines the necessity to carry out regular market overview and review studies to observe the actual market development.

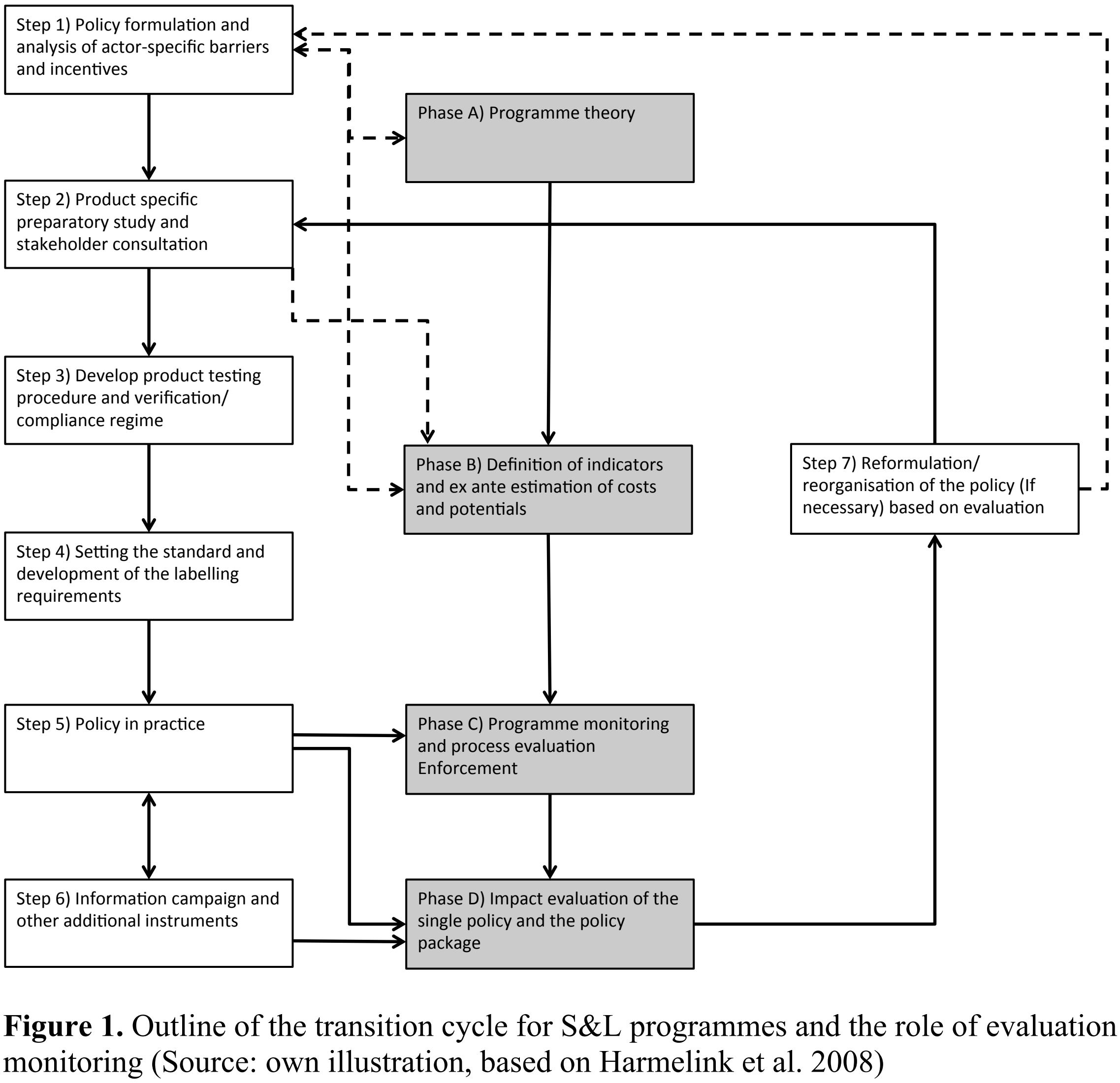

Figure 1. Outline of the transition cycle for S&L programmes and the role of evaluation and monitoring (Source: own illustration, based on Harmelink et al. 2008)

Evaluation of the policy design and implementation process for the S&L in South Africa

In this basic evaluation, the transition cycle based design and implementation theory for S&L programmes described in figure 1 will be applied and compared to the South African policy design. Barriers and policy gaps will be identified and analysed. South Africa is now among the first countries in Africa with S&L programmes. However, in comparison to other regions that already introduced such policies, the implementation took significantly more time than originally estimated (REN 2015).

After a long policy formulation period (Step 1), the actual policy design started with the selection of product groups based on impact assessment studies (Step 2). One reason for delays was the lack of co-ordination due to missing staff and financial resources in the public sector. Another reason was the lack of available information (e.g. market and product data). Furthermore, low priority was assigned by policy makers to push energy efficiency as major topic on the political agenda, as South Africa is struggling with emerging country challenges, like ensuring the quality of life, health and education (Covary & Averesch 2013). However, with adequate support by the UNDP it was possible to foster the development of the mandatory S&L programme.

For Step 1, a national problem is the rudimentary knowledge of product-specific stock and energy consumption data. Appliances were not tested according to standards and only limited independent information was (and is) available on the energy performance distribution, hindering the identification of saving potentials (Sustainable Energy Competence Centre 2014). A publicly available overall ex-ante evaluation of energy savings and costs is consequently missing in South Africa.

The lack of information and knowledge is also a barrier for successful stakeholder consultations (Step 2). Companies often do not have a dedicated department responsible for energy efficiency improvements and the management of energy consumption (Covary & Averesch 2013). In addition, according to the Department of Minerals and Energy (2004) "there is a frequently encountered misconception [...] that energy efficiency will disrupt production processes and that changes should not be made unless absolutely necessary. There is a fear of interrupting running processes as long as they work" (Sustainable Energy Competence Centre 2014).

In parallel to stakeholder consultations, testing procedures according to international standards (Step 3) were developed. Respective upgrades of the existing testing laboratories have been initiated, but even up to now these facilities are not yet operative to verify that products meet the standards. Furthermore, there is only limited guidance in terms of compliance requirements. Also no monitoring and evaluation approach (Phase C) is implemented so far (UNDP 2015).

Within Step 4, the actual standard setting, the design of energy labels and the procedure used to define requirements have not been made public and transparent. The efficiency level of appliances already on the market has been potentially considered as basis, but there is no documentation available.

In the context of Step 5, the policy in practice needs effective MV&E frameworks and policy evaluations (Phase C and D). As these parts are missing in South Africa, results from a first evaluation of the most relevant S&L aspects are presented in this paper. Outcomes of an initial impact evaluation (Phase D) are presented exemplarily for cold appliances in the next chapter.

Another relevant element is the information of consumers and investors (Step 6), especially as direct success factor for the energy label. Most people in South Africa are not sufficiently aware of energy saving options or about real costs and benefits (bigEE 2013). A focus group interview undertaken in 2012 found that all surveyed consumers supported the label implementation (Covary 2012). However, reported issues included confusion regarding the wording for descriptions on the label (e.g. why does it say 'energy' and not 'electricity'?). As South Africa has many languages (11 official) certain words may also be misunderstood (bigEE 2013). Although announced by a White Paper back in 1998, adequate dissemination campaigns to ensure that appliance purchasers are aware of the purpose of the labels are still pending (SABS Standard Division 2014).

Furthermore, a systematic revision approach (Step 7) for the product-specific S&L is still under development. No public timeframes or respective announcements have been found so far.

The deemed programme theory of the South African S&L is illustrated in the following figure 2.

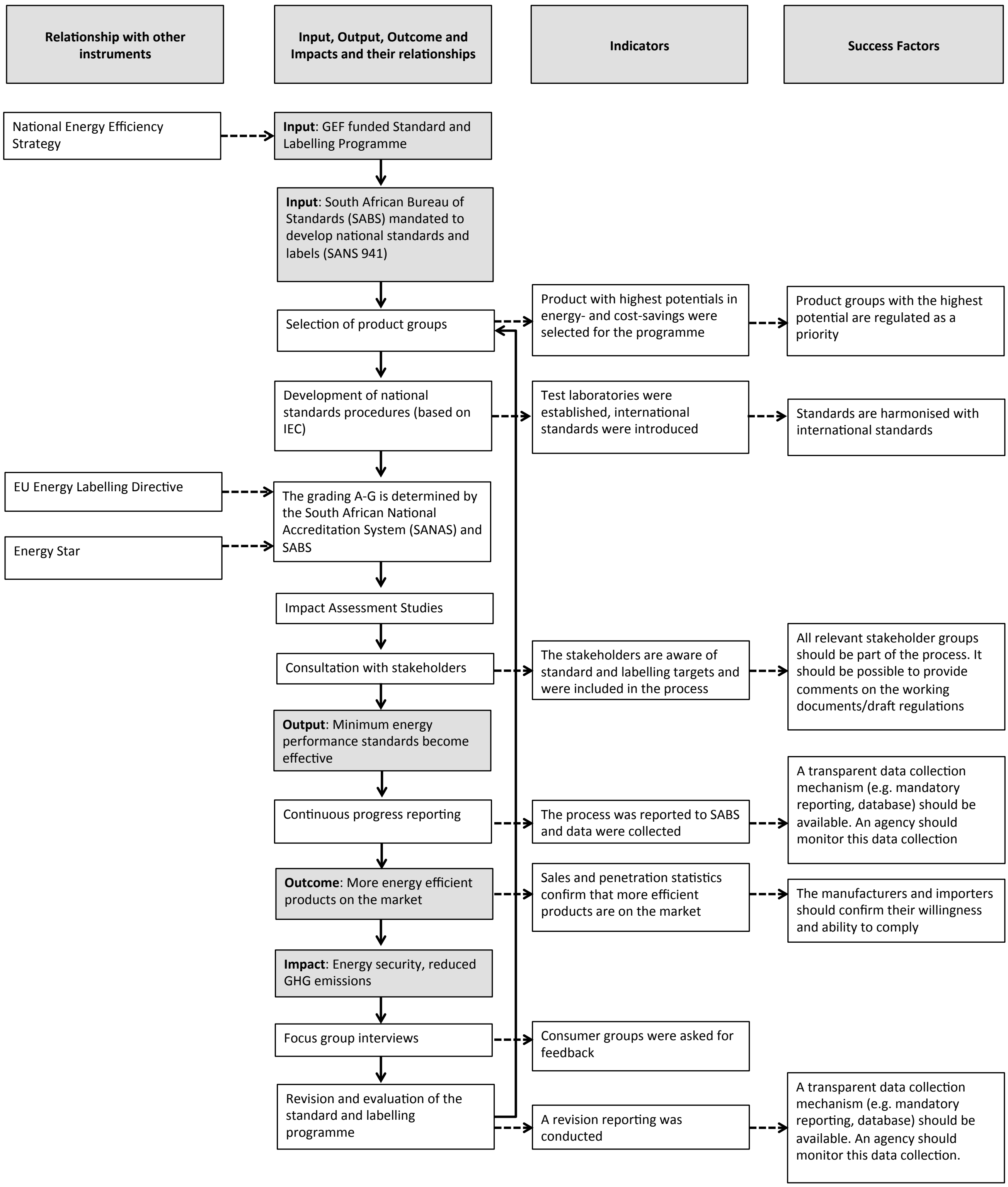

Figure 2. Programme theory of the South African S&L programme (source: own illustration)

Market study for cold appliances in South Africa

Product performance

With effect from 28 August 2015, Minimum Energy Performance Standards (MEPS) came in force for refrigerators and freezers in South Africa, with label class B as least efficient class to remain on the market for refrigerators and class C for freezers (Government of South Africa 2014). In order to evaluate the actual impact of the new S&L programme, it is essential to analyse the preceding market baseline. It has to be assessed whether and when a potential improvement in energy performance has already resulted or will result from the newly implemented regulation.

For this purpose, a market analysis for 2010 is used as baseline to be compared with a market analysis for 2014 as last preceding year before MEPS came into effect. The numbers for available models in 2010 and the energy class levels are based on survey responses by the six major manufacturers in South Africa. The numbers for 2014 are based on manufacturer responses and public information available on product websites. It is assumed to be a representative, but not a full list of models available per manufacturer in the reference years. For example, ranges which were coming to an end of the product lifecycle or for which production had been already discontinued may have been excluded even though they were still widely available on the market. Due to the lack of mandatory information requirements (e.g. product databases) in South Africa, the provided data cannot be verified by official sources.

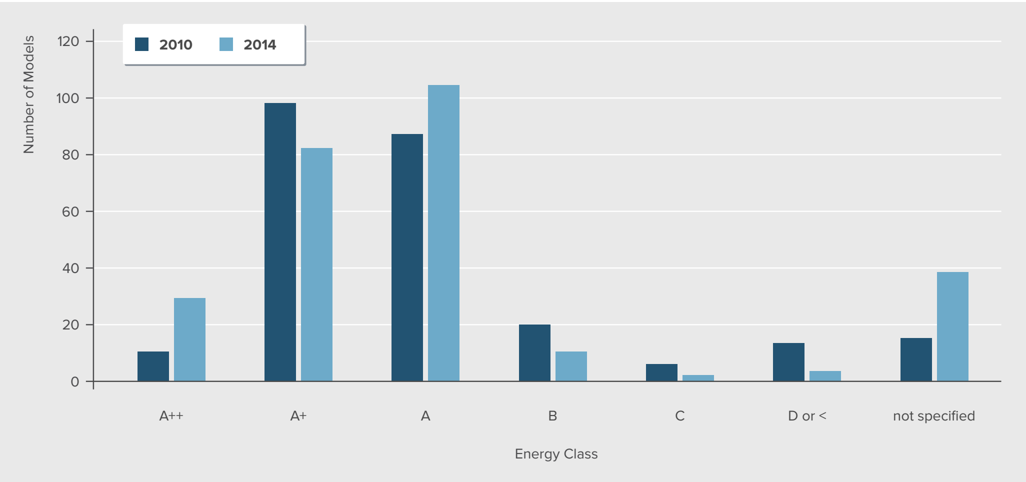

Figure 3. Energy class ratings of fridge/freezer models available in 2010 and 2014 (own illustration)

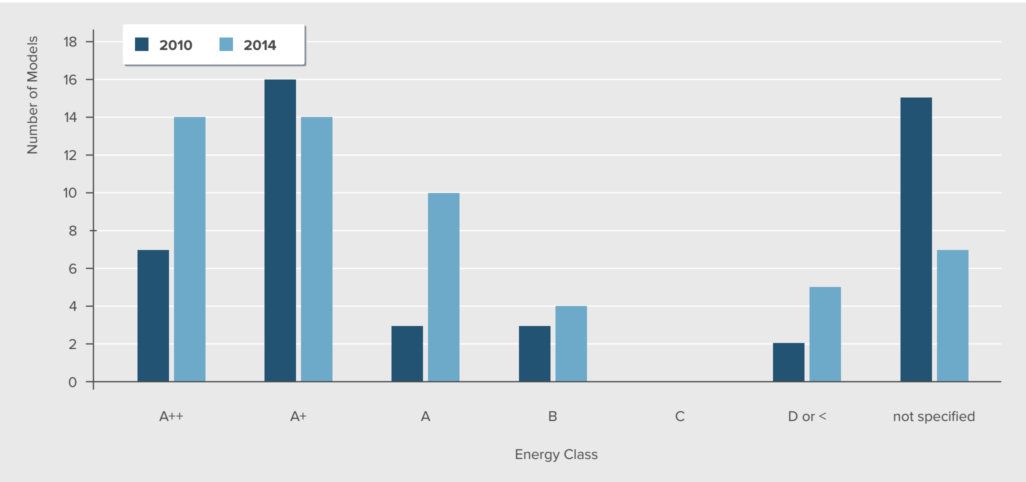

Figure 4. Energy class ratings of freezers available in 2010 and 2014 (own illustration)

Findings

The absolute numbers of available cold appliance models found on the South African market for 2010 and 2014 were very similar. In 2014 the majority of models already met the 2015 MEPS, few did not and a certain number included ‘unspecified products’, whereas in 2010 there were overall less qualifying models (see figures 3 and 4). In both cases the number of models not complying with the 2015 MEPS made up only a small percentage of available models, so it can also be inferred that manufacturers already anticipated the new regulation at an early stage. The number of efficient and very efficient models increased significantly from 2010 to 2014.

Given the same absolute numbers of available models, changes in the efficiency range between 2010 and 2014 may be most likely attributed to local model ranges that have been upgraded to reach higher efficiency classes. Especially ‘unspecified’ freezer models in 2010 were locally manufactured models, which had never been tested according to international standards as there was no requirement to do so and no accredited testing laboratory existed. Accordingly, the number of unspecified freezer models decreased significantly from 2010 to 2014. However, based on the available data, it was not possible to differentiate if unspecified models remaining in 2014 were poor performing models or whether these models have just not been labelled as there was no requirement to do so. In all likelihood the explanation is a combination of the two reasons.

Regarding the general energy class distribution, it was found in both years that major concentrations of models were at efficiency class A and better or class D and worse, with few models being found in between in classes B and C. Based on the specific South African market structure, this pattern may be explained by the characteristic two-tier consumer base. More expensive models (including national and imported world-wide BAT) account typically for the A and better energy classes and locally manufactured low-cost models - usually only sold in South Africa and neighbouring countries - for the other end of the energy efficiency scale.

Conclusions for policy design

The development of minimum energy performance standards (MEPS) in combination with energy labels is a very effective and successful approach all over the world to encourage energy efficiency improvements in appliances (bigEE 2013). The long absence of MEPS or sufficient incentives in South Africa meant that no energy performance improvements were made in particular to the poorly performing local appliances. Manufacturers accepted that these low-cost units would fare poorly in energy class E or below.

Although the delay of the S&L programme resulted in a persisting market share of appliances with unspecified energy rating until 2014, it can be now concluded that the market average efficiency had already improved significantly after 2010. This suggests that also local models had already been improved in advance to meet the 2015 MEPS.

However, based on the anticipated changes within the efficiency class distribution in the preceding years, no substantial further efficiency gains after the implementation of the new 2015 S&L for residential cold appliances can be expected, as the 2015 MEPS level was already mostly obsolete in 2014. In particular for freezers, without models remaining in efficiency class C, a 2015 MEPS level of B would have been obviously also possible for local manufacturers without disproportional effort. In retrospect, setting the MEPS for freezers at energy class C, and not B, can be also interpreted as concession to support the local manufacturing industry, based on the 2010 product lines.

Therefore, and in combination, with ambitious further sustainability targets, strong arguments exist for the broad usage of the available efficient appliances and the implementation of much more ambitious S&L policies to support a faster diffusion of the most innovative technologies in South Africa by economies of scale.

Energy impact evaluation of the new S&L for cold appliances

Identified back in 2005 as most relevant group of residential appliances in terms of energy saving potentials and selected as first product group for a voluntary labelling scheme approach, the impacts of the new mandatory S&L requirements have been evaluated and results will be presented in this paper exemplarily for cold appliances with focus on stock development and energy consumption.

Until the late 1980s the electrification rate for residential households was low in South Africa, whereby almost all white households had electricity and non-white households did not. A successful electrification programme from the mid-1990s, which continues to this day, expanded the market for electrical appliances considerably, but nevertheless, the country's persisting and significant income inequality means that the middle to lower end of the market chooses appliances almost exclusively based on price and brand. These appliances typically have less functionality and are often higher consumers of electricity. Conversely, upper income households choose their appliances based on functionality, design, brand, guarantees and after sales service, aesthetics and to a lesser extent and only more recently on their energy consumption. Consequently, South Africa has developed a pronounced two-tier consumer base, with each group supporting very different brands, models and efficiency levels (Covary, Götz & du Preez 2014).

Energy saving potential for refrigeration appliances

As cold appliances have a very high household penetration rate of more than 80 %, operate 24/7 and have also an average technical product lifespan of more than 10 years, a reduction of the unit energy consumption (UEC) of appliances will result immediately in significant energy and cost savings from societal and consumer perspectives. Therefore, this paper focuses on fridge/freezers and freezers, because these product groups are the two most popular sub-categories of the cold appliances market in South Africa.

Results from a stock model based scenario analysis are presented for the period 2010 to 2030 with 2010, 2020 and 2030 as main reference years.

Fridge/freezers

In the starting year of the scenario analysis (2010), approximately 7.4 million fridge/freezers were in use in South Africa. The average annual consumption of each of these fridge/freezers amounted to about 472 kWh in 2010. In total, this caused an annual electricity consumption of 3.5 TWh (see figure 5). The calculations of the efficiency scenario (B) are based on the assumption that every time a new fridge/freezer is bought, the most efficient "Best Available Technology" model on the South African market is chosen and that the improvements of the most efficient models over the years are taken into account. This is based on the observation, that real prices for efficient technologies typically decline significantly due to economies of scale induced by a massive market diffusion (ASAP 2014). In contrast, the baseline or "Business As Usual" (BAU) scenario (A) assumes a development without more ambitious S&L energy efficiency policies and therefore a continuation of current tendencies regarding size, use and efficiency of appliances sold on the market (Covary, Götz & du Preez 2014).

While the stock of fridge/freezers is expected to grow by 55 % between 2010 and 2020, in the efficiency scenario (B) the energy consumption can be reduced by 21 % compared to the starting year (see figure 5). According to stock model results, the most inefficient old appliances will be replaced until 2023/24. Although the stock is expected to grow by another 41 % between 2020 and 2030, in the efficiency scenario the energy consumption would further decrease by 20 %. Thereby, higher living standards including e.g. increasing appliance ownership rates and household numbers have been already anticipated. In contrast, in the baseline scenario with only moderate efficiency gains as consequence of the current S&L, the energy consumption would further increase by 17 % until 2020 and by 7 % between 2020 and 2030 (Covary, Götz & du Preez 2014).

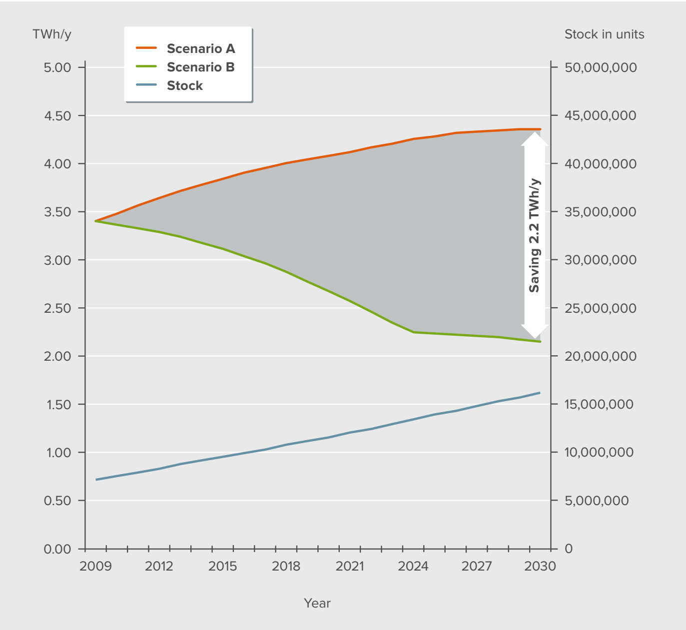

Figure 5. Total electricity consumption and stock development of fridge/freezers in South Africa, Baseline Scenario (A) vs. Efficiency Scenario (B) (Source: Covary, Götz & du Preez 2014)

Freezers

In 2010, about 3.5 million freezers were in use in South Africa. With an average annual UEC of 473 kWh the total annual electricity consumption amounted to 1.6 TWh. Based on the performed stock model based scenario calculations, efficiency improvements can also be achieved for this product group, especially if old inefficient models are replaced by modern efficient ones.

In contrast to the fridge/freezers, the freezer market in South Africa was almost exclusively supplied by local manufacturers until 2010 and is still dominated by these products. Low-cost local freezer products, mainly built for the South African market as well as neighbouring countries, were typically characterized by poor energy efficiency ratings compared to international standards. In recent years local manufacturers have upgraded their product lines to improve the efficiency and at the same time also international companies have increased their market share (Covary, Götz & du Preez 2014). As for fridge/freezers, calculations of the efficiency scenario (B) are based on the assumption that every time a new freezer is bought, the most efficient BAT model on the South African market is chosen and that improvements of the most efficient models over the years are taken into account. Accordingly, also the baseline (BAU) scenario (A) for freezers assumes a development without further and more ambitious S&L energy efficiency policies and therefore a continuation of current tendencies regarding size, use and efficiency levels of products sold on the market.

For freezers, the stock is expected to grow by 55 % between 2010 and 2020, but in the efficiency scenario (B) the rise of the energy consumption can be mitigated to 11 %. Although the stock is expected to grow by another 44 % until 2030, in the efficiency scenario the energy consumption would even decrease by 19 % (see figure 6). As for fridge/freezers, higher living standards, represented by increasing appliance ownership rates and household numbers, have been anticipated. In contrast, in the baseline scenario (A) with only moderate efficiency gains as consequence of the current S&L, the energy consumption would increase by 26 % until 2020.

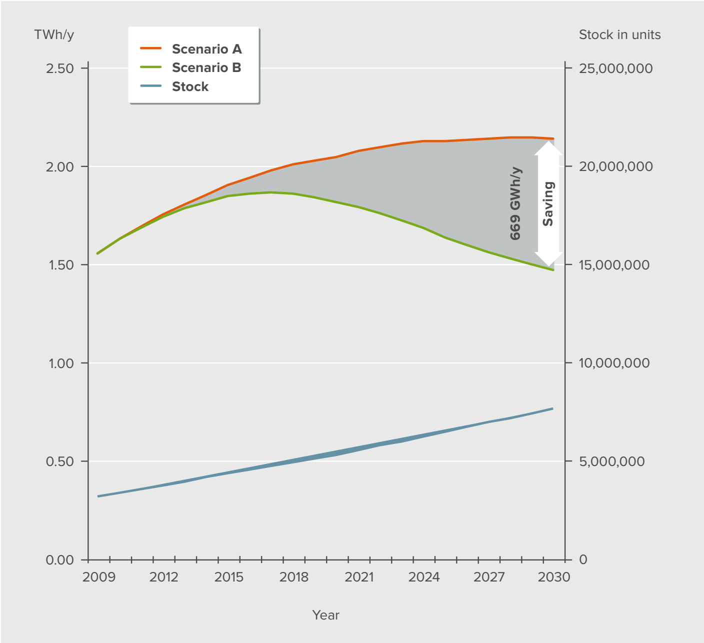

Figure 6. Total electricity consumption and stock development of freezers in South Africa, Baseline Scenario (A) vs. Efficiency Scenario (B), (Source: Covary, Götz & du Preez 2014)

The above-presented results from the performed market study in combination with scenario calculations for fridge/freezers and freezers show that significant amounts of energy could be saved in South Africa by a broad application of the most efficient products. According to the performed model calculations, savings are usually also very cost-effective from societal and consumer perspectives as consequence of economies of scale.

Policy recommendations

In the recent years South Africa has already developed a considerable energy policy framework, including the mandatory S&L programme for 12 appliance groups. Despite these efforts, compared to other countries, South Africa just began to focus on energy efficiency and thus programmes have still several shortcomings. However, to initiate and foster a broad market transformation towards the most energy-efficient products and to use the positive socio-economic effects, it is highly advisable for policymakers to overcome country-specific market barriers and to take necessary action. This becomes in particular relevant for the appliances sector, as results from the performed market studies and scenario calculations show that significant amounts of energy could be saved with the most efficient appliances available today. As these savings are usually also very cost-effective and in combination with ambitious other sustainability targets, strong arguments exist to foster also the broad usage of efficient appliances by implementing adequate product-specific and much more ambitious S&L policies (bigEE 2015). In the following the most relevant general S&L-specific recommendations for policy actions are listed:

- Ensure political commitment to the described principles for effective S&L programmes
- Strengthen in general the good governance framework in the public sector to implement policies properly and to avoid potential loopholes. Address any existing lack of priority for the S&L programme and allocate sufficient resources and specialized skills.
- Address doubts regarding possible positive socio-economic effects of effective S&L programmes as well as the related lack of implementation motivation and capacities.
- Optimize mandates and responsibilities for the design and implementation of new mandatory S&L requirements by improving the coordination between government institutions.
- Reduce significantly the duration from S&L programme design to the actual implementation

- Address the appliances market specifically to foster also local innovation and avoid unnecessary concessions. Include also an adequate MV&E framework as well as dynamic review procedures.
- Phase-out energy-wasting appliances and promote the purchase of the most energy-efficient ones in order to incentivize and strengthen in particular also local manufacturers by creating ambitious product-specific policy packages in the general energy efficiency context, also to provide affordable and efficient appliances to the whole society by economies of scale.
- Increase attractiveness of investments in energy efficient appliances with reduced payback periods by tailored support schemes.
- Ensure a better connection and coherence between S&L and other policies and measures in different EE programmes.
- (Re-)Establish and develop other related energy efficiency programmes, e.g. based on the good experiences from the successful South African energy efficiency demand side management (EEDSM) programme[1].

In addition, the specific findings of the performed evaluation case study provide strong evidences for the recommendation that the existing S&L requirements for refrigerating appliances in South Africa should be revised as soon as possible to harness the available additional saving potentials. A revision to tighten the current MEPS should also in particular not hold any considerable cost implications for local manufacturers and consumers. The market obviously contains already more than sufficient - also locally manufactured - appliances that perform much better than required by the 2015 MEPS level.

To avoid that consumers and manufacturers lose faith in the reasonability and effectiveness of the entire S&L programme, similar considerations should be made also for all other covered product groups. Furthermore, it is important that South Africa develops reliable and appliance-specific Measurement, Verification and Enforcement (MV&E) schemes with strict sanctions to ensure that at the end the market is actually compliant with all new requirements. Also the definition of KPIs should be considered to evaluate the progress and to plan the review of the policy.

Conclusion

Overall, the South African energy efficiency policy and the related market for energy efficiency products are dynamic. The National Energy Efficiency Strategy and the associated introduction of efficiency targets as well as several financial support programmes established a first foundation for an energy efficiency policy framework. Furthermore, the shortage of electricity and rising energy prices should already provide strong incentives for policy makers and other stakeholders to implement more ambitious energy efficiency measures, also to strengthen the international competitiveness of local industries and to ensure fair energy access and security. However, the performed initial evaluation revealed the current S&L programme, in particular for cold appliances, to be already obsolete and ineffective to achieve additional energy and cost savings and the further transformation of the market.

Although the delay in implementing the S&L for appliances may have supported certain old products of the local manufacturing industry for a very limited period, it was regarding the lost local innovation potential and the cost disadvantages a definite drawback for the South African economy as well as for the regulative influence of the government. Any further improvement in the average appliance efficiency classes would have directly translated into socio-economic benefits, which have now been lost and related GHG emissions have been also locked-in for years. Nevertheless, South Africa is now also at the beginning of a potentially much more comprehensive S&L programme development and revision cycle which provides large new opportunities to foster a successful transition of the appliances market. The additional S&L saving potential is there – South Africa just needs to use it now!

[1] For further information on this policy, please see http://www.bigee.net/en/policy/guide/buildings/policy_examples/51/

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