Energy efficiency standards and labelling of household appliances in the Andean Community - national programmes and the prospects of regional harmonisation

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1. ENERGY EFFICIENCY IN THE COUNTRIES OF THE ANDEAN COMMUNITY

Energy efficiency has been a policy issue in the Andean Community, comprised of: Bolivia, Colombia, Ecuador, Peru and Venezuela, since the early 1990s. Several programmes were initiated at this time including: the National Plan for the Rational Use of Energy (PlanURE) in Colombia, the Energy Conservation Programme (PAE) in Peru and the Programme for Economic and Energy Efficiency (PEEE) in Venezuela. Specific agencies or ministerial departments were established to administer these programmes such as: the Institute of Nuclear Science and Alternative Energies (INEA) in Colombia; the National Energy Institute (INE) in Ecuador; the Centre for Energy Conservation and the Environment (CENERGIA) in Peru, and the Energy Efficiency Division of the Ministry of Energy and Mines of Venezuela. Many of these efforts have layed the basis for today's energy efficiency programmes in the region, although their focus and the institutional setting have undergone rather profound changes. In an attempt to support the integration of energy efficiency and environmental sustainability criteria within the energy policies of Latin American countries, a joint project of the Economic Commission for Latin America and the Caribbean of the United Nations (UN-ECLAC) and the European Commission assisted various countries in Latin America, including Colombia, Peru and Venezuela, to elaborate and implement primary legislation to promote energy efficiency. Thus far energy efficiency laws have been implemented in Colombia and Peru. A draft energy efficiency bill has been presented in Venezuela and a bill is also under preparation in Ecuador.

This framework energy efficiency legislation often makes direct reference to energy efficiency labelling and standards for energy using equipment. Venezuela and Colombia, initiated programmes in first half of the 1990s (see section 2) and more recently Peru has begun to work on the issue. The Andean Programme of Energy Integration (PAIE) has also provided a significant impetus to the (further) development of energy efficiency standards and labelling in the region. This co-operative programme of the Junta del Acuerdo de Cartagena (JUNAC) – now: Commission of the Andean Community - and the European Commission was carried out from 1995 to 1996 and lead to a joint proposal by the relevant

ministries and standardisation institutes of the member states for a strategy to develop and implement common Andean Community energy efficiency standards for tradable goods. The proposal foresaw harmonised technical standards and labels within the framework of the "Andean System of Standardisation, Testing, Accreditation, Certification, Technical Rules and Calibration" and culminated in the proposal of an Andean Energy Efficiency Standard for refrigerators, freezers and their combinations (Lutz, 1996; Oliveros, 1996). Unfortunately, due to the termination of PAIE at the end of 1996, the process towards harmonised standards lost momentum. Nevertheless, the project produced indirect results, such as the elaboration of technical energy efficiency standards for domestic refrigerators and freezers and lamps in Peru and a move towards international ISO/IEC standards in Colombia.

After a period of relative inactivity in the late 1990s efforts to establish effective energy efficiency standards and labelling of household appliances have recently regained momentum in the member states of the Andean Community. Regional harmonisation also continues to be seen as an interesting option.

2. NATIONAL ENERGY EFFICIENCY STANDARDS AND LABELLING POLICIES AND PROGRAMMES

2.1 Colombia

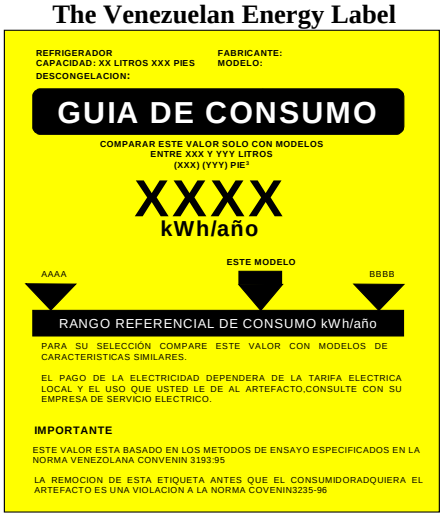
INEA developed energy consumption test procedures applicable to a series of household appliances, including: refrigerators and freezers, light sources, electric water heaters, window type room air conditioners and electric stoves, between 1994 and 1997. These early standards were developed with the support of US and Mexican agencies and were mainly based on equivalent ANSI/AHAM and Mexican test standards. In 2001, following the promulgation of the Law on the Rational Use of Energy of 3 October 2001 and the creation of the National Programme for the Rational Use of Energy and Energy Efficiency (PROURE), the Colombian government established the CONOCE Programme (Programa Colombiano de Normalización, Acreditación, Certificación y Etiquetado de Equipos de Uso Final de Energía). This is co-ordinated by the Unidad de Planeación Minero-Energética (UPME) of the Ministry of Mines and Energy, in co-operation with the Colombian Institute for Standards and Certification, ICONTEC, other government institutions, manufacturers, retailers and universities. Its objective is to realise the energy efficiency potentials associated with the optimisation of the energy performance of end-use equipment in the different socio-economic sectors of the country and to foster awareness of energy efficiency among Colombian citizens. The programme incorporates two complementary strategies: a cultural strategy, which is based on information and training activities, and a market strategy, which implies the implementation of commercially orientated mechanisms to achieve market transformation towards efficient technologies.

In 2001 UPME passed resolution No. 165, which lists the equipment that is to be the subject of energy efficiency labelling requirements including: domestic and commercial refrigerators and freezers, ballasts, compact fluorescent lamps, sodium vapour and mercury lamps, air conditioning equipment, electric heaters and alternating current electric motors. UPME and ICONTEC have since developed national technical standards (Normas Técnicas Colombianas – NTC) that combine details of energy consumption test procedures with information on how to calculate energy efficiency thresholds applicable in the energy label for: refrigerators, refrigerator-freezers and freezers; lamps; ballasts; electric motors; heaters and air conditioning equipment. The generic format of the label is based on the EU energy label comprising seven energy efficiency classes ranging from A to G and is specified in NTC 5100 (Figure 1). The new energy efficiency requirements are based upon international IEC and ISO test procedures, which have supplanted the earlier ANSI/AHAM based test standards.

Fig. 1. Energy labels in use in the Andean region

The Colombian Energy Label

The Venezuelan Energy Label



Despite having developed many of the technical requirements needed for energy labelling the Ministry of Economic Development and the Ministry of Mines and Energy still need to elaborate and implement the technical regulations which would establish an obligation to inform consumers about the energy performance of the equipment through an energy efficiency label. These technical regulations, which are to be established in accordance with Resolution SIC 3742 of 2001, will also define a sanctions and supervision regime, as well as specifying the frequency of the review and update of the energy efficiency ranges used in the

label. Other key activities foreseen for 2003 are an intensive consumer-oriented information campaign and the strengthening of the national network of test laboratories, in co-ordination with the institute for the promotion of scientific research and technological development, COLCIENCIAS. The latter will allow in-country conformity evaluation testing, which is seen as a vital element of the programme. In addition to providing support to test laboratories, activities are also foreseen for the accreditation of testing facilities and certification bodies and for the development of equipment certification procedures. Econometric forecasts of the energy sector have predicted that if properly implemented the CONOCE measures for domestic refrigeration and lighting will avoid 400 MW of demand for electrical capacity and result in accumulated emissions reductions of more that 26 Mt of CO_2 by 2010.

2.2 Ecuador

At present, Ecuador has no energy labels, efficiency standards or energy test procedures for energy consuming equipment; however, the government is actively considering their introduction. The intention is that the development of such energy efficiency regulations would fall within the remit of the Ministry of Energy and Mines (MEM); however, this would first require a proper legal framework to be established. The Law for the Rational Use of Energy (Ley de URE), which is under preparation, includes the legal provisions that would permit the MEM to act in this area. In anticipation of its implementation the Directorate of Renewable Energies and Energy Efficiency (DEREE) of the MEM is doing preparatory work towards the following:

- The establishment of a legal and institutional framework allowing the MEM to develop a process for energy efficiency standardisation and labelling, as well as the accreditation of laboratories and of entities responsible for certification and conformity evaluation.
- The development of mandatory Official Energy Efficiency Standards (Normas de Eficiencia Energética Oficiales - NOE) for energy consuming equipment and systems in each energy-consuming sector. These standards will be the result of a participatory process to reach consensus among manufacturers, consumers, research institutes, professional associations, chambers of industry and commerce and the Government.
- The development of tools to orient the public in the purchase and use of efficient equipment and systems.

The Ecuadorian Standardisation Institute (INEN), which is the entity in charge of the development and ratification of Ecuadorian Technical Standards, would need to develop energy test procedures to support these programmes; however, there is currently a lack of test laboratories in the country capable of conducting the required testing.

2.3 Peru

In September 2000 the Peruvian government enacted The Law of the Promotion of the Efficient Use of Energy, which stipulates that "The equipment and appliances that require energy supply will include in their labels, containers, packaging and publicity information on their energy consumption in relation with energy efficiency standards, under the responsibility of their producers and/or importers". This article is currently in need of a supporting regulation setting out the details of the appearance of the energy labels, their technical structure, implementation procedures and the rights and responsibilities of stakeholders, before it can practically be put into effect; however, some of the required work has already been addressed. In August 1996, the Technical Committee for the Standardisation of Rational Use of Energy and Energy Efficiency (CTNUREEE) was established at the National Institute of Competence Defence and Intellectual Property Protection (INDECOPI). Since 1999, the Energy Saving Programme (PAE) of the Ministry of Energy and Mines (MEM) has been in charge of its Technical Secretariat. The main role of CTNUREEE is to establish draft standards on test procedures, energy efficiency standards and labelling for household appliances, industrial equipment and equipment that uses renewable energies. The Commission of Technical and Commercial Rules (CRT) of INDECOPI is in charge of approving and ratifying as Peruvian Technical Standards the drafts elaborated by the Committee. Thus far CRT - INDECOPI has ratified seven Technical Standards elaborated by the CTNUREEE including ISO/IEC harmonised energy test procedures for refrigerators, refrigerator-freezers and rotating electrical machines, energy test procedures for solar collectors and industrial boilers, and energy test procedures and labelling specifications for compact fluorescent lamps (CFLs). In 2003 the CTNUREEE plans to elaborate test procedures for photovoltaic systems and boilers; test procedures and labelling specifications for electric water heaters, electric motors and refrigerators, and labelling specifications for household lamps.

2.4 Venezuela

Work on energy efficiency standards and labelling of household appliances has been underway in Venezuela since 1992 under the management of Energy Efficiency Division of the Ministry of Energy and Mines (MEM). Working with the Ministries of Production and Commerce and the National Autonomous Service for Standardisation, Quality, Metrology and Technical Regulations (SENCAMER) the MEM has assembled stakeholder groups comprising the principal actors involved in the manufacture, importation and retail of household appliances; trade organisations; national certification institutions; research institutes and energy utilities. To date these stakeholder groups have assisted the MEM in developing the following national standards:

- COVENIN 3235, “Refrigerators, Refrigerators-Freezers and Freezers. Labelling and Energy Consumption Report”

- COVENIN 3193, “Refrigerators, Refrigerators-Freezers and Freezers. Energy Consumption Test Procedures and Capacity Measurements”
- COVENIN 3537, “Window type Air Conditioners. Test Procedures concerning Cooling Capacity, Energy Consumption and Energy Efficiency”
- COVENIN 3560, “Window type Air Conditioners. Labelling and Energy Consumption Report”

The test procedures adopted in the above standards are equivalent to US ANSI/AHAM standards and the label format is also adapted from Canadian and US formats (see Figure 1). The standards are voluntary in nature with the exception of COVENIN 3235, which has been made mandatory through a joint Resolution of the Ministries of Production and Commerce and Energy and Mines of 13 November 1998 (Gaceta Oficial N° 36.581) in the sense that all new refrigerators and freezers must be labelled at the point of sale in Venezuela. The energy efficiency standards and labelling programme is aiming at minimum energy performance standards for appliances and equipment with high energy consumption or widespread use and at raising consumer awareness of lifecycle costs. The participation of stakeholders in the development of standards was essential to build consensus and to expedite the process of public consultation established by law. This procedure proved successful for the approved standards and for the selection of appliances which would be the subject of future regulation. The intention exists to activate the programme under a scheme of technical standards in the framework of a new Law of Quality Control and Standardisation.

3. NATIONAL POLICIES AND PROGRAMMES IN COMPARISON

Overall grade of advancement: The Colombian programme appears to be the most advanced. The following technical elements have been developed for a range of appliances within the framework of the CONOCE programme and ratified by the Colombian government through ICONTEC: a generic energy efficiency label, complementary appliance specific technical standards including the definition of energy test procedures and reference energy consumption thresholds used to determine the energy efficiency class under the generic label. The application of both the technical standards and label will be mandatory. Work is also underway with regard to rules and infrastructure for testing, certification and accreditation and for an information campaign aimed at the consumers. In Venezuela, voluntary energy efficiency standards exist for cold appliances and for window type air conditioners. There is also a mandatory energy efficiency label for cold appliances and a label for window type air conditioners is under consideration. In Peru, technical standards mostly addressing the measurement of energy consumption for cold appliances, lighting equipment, electric motors, industrial boilers and solar collectors have been ratified by INDECOPI, and more standards are under preparation. The application of the standards is still voluntary. In Ecuador, no energy efficiency standards are yet in place.

Type of standards and label: The technical energy efficiency standards which are in force in Colombia and Peru have been elaborated based on international ISO standards, while the Venezuelan energy efficiency standards are based on Canadian and US (ANSI/AHAM) standards. The Venezuelan energy efficiency label for cold appliances is similar to the US Energy Guide label; however, both the structure and appearance of the Colombian label are similar to the EU categorical energy label. The Colombian energy label is to be mandatory, as is already the case for the Venezuelan cold-appliance energy label. The existing energy efficiency law in Peru and the laws under discussion in Ecuador and Venezuela stipulate the mandatory application of both energy efficiency standards and labels. So far, minimum energy performance standards are not applied in any of the countries, with the exception of Colombia where G-rated appliances are banned from the market. The draft Venezuelan energy efficiency law envisages the introduction of minimum energy performance standards and this may also be the case in Ecuador.

Infrastructure: Rules and procedures for testing, certification and accreditation are in place both on the national and Andean level through the Andean System of Standardisation, Testing, Accreditation, Certification, Technical Rules and Calibration. There are also bilateral agreements concerning certification of conformity among member states of the Andean Community. Independent testing laboratories exist in all countries, however, there is only one laboratory in the region (in Colombia), which is equipped to perform energy efficiency testing.

4. MAIN ISSUES, PROBLEMS AND PERSPECTIVES

Notwithstanding the progress made in each country many barriers continue to exist and problems remain to be resolved. Among the main issues which need to be addressed in the short and medium term are: (i) the (further) development of a legal and regulatory framework for the implementation of mandatory labelling and standards, (ii) the establishment of laboratories to test the energy performance of appliances, (iii) a lack of commitment among public and private actors and (iv) a lack of finance to develop both the institutional and physical infrastructure required to effectively implement the national standards and labelling programmes. The lack of adequate testing facilities and funding are endemic problems in the region, which are severely constraining the practical implementation of the current standards and labelling schemes; however, there are also a number of less fundamental needs such as access to high quality data and analysis in the determination of product categories and energy efficiency thresholds to be used in efficiency standards and labelling regulations. These could have a large baring on the eventual cost-effectiveness of the policy measures were the primary implementation issues to be resolved. Some of the country-specific issues are as follows:

Notwithstanding the important progress made in **Colombia**, in particular the Law on Rational Use of Energy of 2001 and the CONOCE programme, there is still a general problem of the low profile of energy efficiency within the energy policy of the country. This implies a continuing struggle to secure the commitment of public and private actors needed to create the conditions for market transformation. A number of steps need to be taken to ensure that the existing and new regulations are properly implemented.

The Government of **Ecuador** has presented a comprehensive approach, which will focus on the mandatory application of energy efficiency standards and labelling; however, Ecuador is at the very beginning of the process and all the work of developing regulations and test procedures and establishing an appropriate implementation process and infrastructure still needs to be done.

In **Peru**, there is a need for a specific regulation to implement Law No 27345 on the Promotion of Energy Efficiency. While the Law stipulates the obligation of merchants and manufacturers to apply energy efficiency labels to their products, a regulation is required to set out how this should happen. A serious problem is the general lack of resources, which impedes higher consumer awareness and stronger commitment of both public and private actors.

The **Venezuelan** energy efficiency standards and labelling programme has lately been adversely affected by the overrating of the national currency compared to the US Dollar, which resulted in the reduction of national production and its substitution by imports. As a consequence, much of the interest of the national appliance industry to participate in the Technical Standards Committee for Household Appliances (Comité de Normas Técnicas de Electrodomésticos) has been lost. The Government views the reactivation of this participatory process as essential and has addressed the issue of standards and labelling in the draft energy efficiency law mentioned above.

5. PROSPECTS FOR REGIONAL HARMONISATION

International bodies like the Latin American Energy Organisation OLADE and the Pan American Standards Commission COPANT have proposed the harmonisation of energy efficiency standards throughout Latin America and the Western Hemisphere respectively and harmonised programmes at the regional level continues to be an attractive option. As the comparison of the programmes, progress made and issues still to be addressed in the Andean countries reveals, many technical, organisational and institutional issues will have to be resolved before common standards and labels can be introduced. A renewed regional initiative among the member states of the Andean Community could provide an interesting test case for the feasibility of such harmonisation and could provide important lessons for similar processes on a larger scale and elsewhere. Harmonisation of energy efficiency standards in the Andean region could offer important synergies, such as the sharing of experience and scarce resources,

economies of scale and better access to international funding. Benefits would include: a common analytical basis leading to harmonised test procedures, product categories, and efficiency thresholds; the implementation of test laboratories with regional coverage and shared costs; the mutual accreditation and recognition of laboratories and test results; harmonised national legal frameworks with the potential for a common regional energy labelling and efficiency standards regime; and the mutual reinforcement of public awareness campaigns. Manufacturers would benefit from harmonised standards and labelling requirements within the region and within the framework of international trade agreements like the Free Trade Area of the Americas (FTAA). This could lead to the development of a regional market for energy efficient products to the benefit of consumers, manufacturers and the general polity. The harmonisation of standards and labels would also demonstrate the benefits of co-ordinated energy efficiency policies among the member states of the Andean Community and could provide a basis for further supra-national co-ordination of policy measures. Mandatory energy performance standards for the Andean region could be a logical result of such a co-ordinated effort.

6. REFERENCES

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