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APEC Project EWG 3/2003

Seminar on

COOPERATION ON ENERGY LABELLING

Foreword

The APEC Seminar on “Cooperation on Energy labelling” was held in Kaohsiung from the 17th to the 19th of November, 2003. It was attended by energy efficiency administrators, practitioners and technical experts from 16 of the 21 APEC Member Economies. Presentations covered individual economy programmes, examples of cooperative programmes and general topics related to the seminar subject. There was also open discussion on energy performance labelling and planning for future cooperation. The seminar provided a comprehensive picture of the current state and knowledge of energy performance labelling in the APEC region.

When evaluating the seminar, a notable and common comment was that even those who had long previous experience of energy performance labelling had learnt a lot. This is a half-good situation. It is good because it shows that the seminar was useful, productive and necessary. It is not so good because it shows that the knowledge of a highly effective tool to improve the efficient use of our increasingly precious energy resources has not been communicated as widely as it deserves. It is hoped that the seminar itself and subsequent increasing mutual awareness of developments in the area will improve that aspect. Proposals since the seminar to improve and provide long-term support to information exchange are especially pertinent and to be welcomed.

As part of the communication and transmission of knowledge on energy performance labelling, it is hoped that these proceedings will provide a record of the knowledge shared at the seminar, a useful reference for all practitioners in the general area of energy performance labelling and minimum performance standards, and for all seminar participants a reminder and souvenir of their time in Kaohsiung.

The success of the seminar was due to many people. I would like to thank all the participants, who travelled a long way to attend — in some cases a very long way. Particular thanks are due to Dr Tsau Fanghei of ITRI and Chair of the APEC EWG Expert Group on Energy Efficiency and Conservation, who saw the project through the APEC approval process, made the arrangements for the seminar and managed to fit all that, plus the moderator’s duties, into an already heavy workload. He was ably supported by the team from ITRI — including Ms Kao Shao-Hui, Ms Liu Chia-Mei and Mr Sung Teh-Chuan — who efficiently attended to all the details that made the seminar run smoothly. The support received from Mr Tong Xianguo and Ms Belinda Chok of the APEC Secretariat is much appreciated. I would particularly like to thank Ir David Cogan, the seminar organiser and rapporteur, who made useful and effective contribution to the seminar from the concept stage right through to the production of the proceedings. And finally my appreciation to the Energy Commission of the Ministry of Economic Affairs of Chinese Taipei for its financial and administrative support.

I trust that readers of these proceedings will find much that is of interest and of practical use.

Dr Fang Liang-Jyi,
Project Overseer

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APEC Project EWG 3/2003

Seminar on

COOPERATION ON ENERGY LABELLING

Introduction and Welcome

The Seminar Moderator, Dr Tsau Fanghei from ITRI, extended a welcome to the seminar participants, noting that there were 19 speakers from 15 APEC Member Economies taking part in this APEC Seminar on Cooperation on Energy Labelling. APEC and Chinese Taipei appreciated that many of the participants had travelled a long way to be present.



Dr. Fanghei Tsau giving the welcome speech on behalf of the Energy Commission, Chinese Taipei

Dr Tsau explained Chinese Taipei's interest in the subject of the seminar. The Economy imported over 97% of its energy. The main energy source is oil, all of which is imported. Electricity has become the main end-use energy, and the combined commercial and residential sector is now the primary demand growth centre for energy consumption. Meanwhile, with the deregulation of the local energy market, there is an increasing need for demand side management (DSM) to sustain the security of supply. Energy performance labelling and minimum energy performance standards are among the most effective DSM measures and are also conducive to the uptake of energy efficiency technologies.

Every so often it is a good idea to review fundamentals. Trading is essential for development, and the proliferation of different energy performance standards has the potential to increase barriers to trade and reduce the effectiveness of energy performance labelling and minimum standards arising rapidly across APEC.

This project and seminar, like many of its predecessors, aims at improving transparency, information exchange and capacity building. Presentations at the seminar provide up-to-date information, and also examples of cooperation, demonstrating its importance and putting energy labelling projects into perspective. The seminar also transfers knowledge and ideas throughout the region. Chinese Taipei wishes to share its knowledge and learn from others, and in this endeavour it is ready to continue its support for related projects and cooperation in the APEC region.

Dr Tsau concluded his address by forwarding best wishes for the seminar and wishing the participants an enjoyable stay in Kaohsiung.

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The APEC Energy Standards Information System:

Dr Peter du Pont from the Bangkok office of Danish Energy Management A/S, the lead contractor for the maintenance of the APEC-ESIS website, provided an overview of the Energy Standards Information System.

There is currently a proliferation of energy efficiency standards, and while energy performance labelling and minimum energy performance standards (MEPS) are among the most cost effective energy efficiency actions, the proliferation of different national standards can represent a technical barrier to trade in energy efficient products. Generally it is very difficult to find what requirements are, and it is difficult for regulators to follow developments. It is hard for manufacturers to identify requirements. Therefore there are real benefits of harmonization, with rapid progress if suitable existing standards are accurately identified.

The alignment of mandatory energy efficiency standards is a long-term goal of APEC Energy Ministers. APEC funded development of the Energy Standards Information System (ESIS) in 2002. The ESIS web-site includes a Home Page plus a feature on "What's New on ESIS", a listing of standards documents by product, a listing by Economy, detailed information on each standards document, a listing of standards documents under consideration, plus other services.

There are regular E-mail updates and notifications of standards under revision and consideration sent out. The site includes information on how to get copies of standards, and a list of experts and key contacts working in each economy. It provides an expert forum for discussion of various topics of interest to ESIS followers, and has links to other relevant web sites. ESIS may also form the basis for international benchmarking studies, which promise to be a useful tool when developing energy efficiency programmes.

Dr du Pont gave examples of a comparison of air-conditioner energy efficiency levels in Australia and Thailand, and of a ballast survey. He concluded by outlining the 2004 work plan, and by pointing out the need to obtain long-term support.

Questions and discussion

Dr Choi asked how often the database was updated. The response was that the primary focus of the website was getting data regularly updated; during the year there had been about 55 entries amended plus 25 news items added.

Dr Hill asked about the relationship between ESIS and CLASP. CLASP is currently a sub-contractor to DEM, with one of the CLASP partners, IIEC, actually carrying out the updating. However, CLASP had made a sponsorship offer which would share the CLASP database and thereby expand the coverage of ESIS by 23 additional economies.

Dr Sinsukprasert suggested that to make ESIS even more useful, it could include an energy efficiency database with details of the performance of individual models. Dr du Pont pointed out that this would be a huge job, but could perhaps be done economy by economy. Professor Mohd Taha queried how in that case the Australian benchmarking study would collect data. Australia said they would fund someone to collect the data from the five top producers. Once collected, the data could form a powerful tool. Dr Tsau pointed out that the data must be reviewed by the economies concerned.

The IEA & its Rôle in Energy Labelling

Frank Pool from New Zealand is the Operating Agent for the International Energy Agency's Demand Side Management Task XII: Energy Standards. He pointed out that the term "energy standard" applies to a lot more than simply "MEPS and labelling", and that such standards underpin many different applications. There are many regional and other multi-economy initiatives, but no central driving force. Energy efficiency programmes produce effective results, but are also dynamic and need dynamic tools. A service such as that provided by ESIS could well develop into a global database, and an IEA "implementing agreement" would



Dr du Pont and Mr Pool

provide a natural place for it, especially with the development of the DSM Task XII and the new Climate Technology Initiative.

Mr Pool explained the IEA organisation, and that there are six APEC member economies that are also members of the IEA, and increasing close relationships with others. He emphasised that the activities of the IEA Secretariat are separate from those of the implementing agreements. He also pointed out that there is a difference between the European Union, which handles MEPS and labelling, and other standards-based energy efficiency programmes in Europe that are run by individual member economies, with cooperative programmes possibly being carried out as IEA tasks. Wider participation is welcome. Thus it would make sense to obtain the benefit from cooperative energy efficiency initiatives by supporting, for example, IEA-DSM Task XII: Energy Standards.

Questions and discussion

In response to a request from Mr Tseng, it was explained that an implementing agreement essentially comprised a group of interested parties from a number of IEA economies working together on a general subject of common interest. The work could be split up into discreet tasks with slightly different participants. In detail implementing agreements could differ from each other.

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Development of Energy Labelling in Malaysia; Past, Present and Future

Professor Faridah Mohd Taha of the Faculty of Electrical Engineering, Universiti Teknologi Malaysia, was the chair of the Energy Efficiency Working Group, which has since been upgraded to a technical committee.

Malaysia is a net exporter of energy, but that is likely to change around 2008. Renewable energy and energy efficiency are seen as new energy resources. Labelling will apply in the domestic sector, and possibly to some industrial equipment. The three largest energy users in the domestic sector are refrigerators, air-conditioners and fans, and the original brief given to the Working Group was merely to “develop standards” for these. Later it was realised there needed to be more work than this, and the brief was changed. However, there is still much to learn, and Malaysia is keen both to support ASEAN energy efficiency initiatives, and to obtain help from international organisations and others with expertise in energy labelling.



Professor Mohd Taha

Questions and discussion

Referring to one of the trial label designs for Malaysia, Lloyd Harrington queried whether the ratings “A” to “G” were acceptable. It was explained that the label was primarily to test the “speedometer dial” concept, and that the letters were not necessarily a fixed feature.

When asked by Dr Wiel what she considered the main lesson learnt so far, Professor Mohd Taha considered that the speed of development has been too slow.

Mr Tseng asked about the use of a Malaysian Standard and not an international one, and also about the laboratory requirements. The response was that the Malaysian Standard is an adaptation of the ISO one, while the need for

a credible test laboratory meant that the laboratory was developed concurrently with the development of the Standard.

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Singapore’s Energy Labelling Initiative for Household Electrical Appliances

Mr Lim Choon Howe of Singapore’s National Environment Agency presented the Singapore Energy Labelling Initiative. Their “ECO Labelling” scheme was launched in 1992.

Comparative labelling is an extension of that scheme, and covers refrigerators and air-conditioners, which account for 18% and 24% of domestic electricity consumption respectively. Energy labelling is voluntary, and models gain either one, two or three “ticks”. There are not many one tick models labelled.



Mr Lim

The initiative collaborates with other programmes, including adding information on the label to the school syllabus on energy conservation, and working with retailers to have labelled products specially displayed. The NEA is currently working on extending the labelling scheme to inverter type air-conditioners and washing machines. It is also studying whether to make labelling mandatory.

Questions and discussion

Dr Choi asked from where the NEA obtained information on appliance performance. Singapore cannot have its own standard as they do not manufacture. Therefore the ISO test is used for air-conditioners. However, as the majority of units are multi-split type, it is not possible to keep strictly to ISO 5151. For inverter types, they may move to the Japanese standard.

Mr Holt asked about the criteria to be used in the decision on whether or not to move towards mandatory labelling. It is still hoped to encourage the suppliers to support voluntary labelling.

Dr du Pont questioned the efficacy of voluntary labelling. For a move to mandatory labelling it would be necessary to assign a monetary value to the label. Other mandatory measures in Singapore, such as the prohibition on spitting, have a value assigned derived from the health benefits. It will be necessary to obtain more information on, for example, the market share of labelled models.

Mr Harrington asked whether there was a minimum requirement for a one-tick label. There is a requirement, and those models that do not qualify may not carry a label. However, the appliance suppliers, who in Singapore tend to be marketing oriented, think that even just one tick looks bad, and so few one-tick models are actually labelled.

Dr Sinsukprasert asked about the liaison between environmental and regulatory bodies. The Regulator of Energy is a member of the National Energy Efficiency Committee.

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The Design and Market Research of China's Energy Efficiency Information Label

Dr Jin Minghong of the China National Institute of Standardization described the development of the Chinese Energy Efficiency Label. China is the second largest consumer of energy in the world, hence the interest in energy efficiency. Its energy efficiency programmes include mandatory MEPS and voluntary labelling. There is a trend for the government functions to move away from the previous managing of process to concentrating on the end effect of energy use.

The Law on Energy Conservation mandates MEPS, information labels and endorsement labels. There are several benefits associated with the law, including huge energy savings. Labelling is being applied to the more common products that have substantial energy savings potential. Labelling will be mandatory, but it will use a self-certification model with reporting of energy performance.

It has been decided to have three efficiency grades for lighting products and five for household appliances. In the latter case, the grades are set using the following criteria:

- Ø The top grade, “1” or “A”, is the optimal point of technical potential or international advanced level;

-
- Ø Grade “2” or “B” is the optimal point determined by life-cycle costing, and the point at which the number of Grade “A” and Grade “B” models is less than 20% of those on the market;
 - Ø Grade “3” or “C” represents the average level in market;
 - Ø Grade “4” or “D” will be eliminated in the very near future;
 - Ø Grade “5” or “E” is at the present MEPS level.

As well as the actual labelling itself, supporting activity includes improving consumer awareness of the label and energy efficiency, monitoring the market, evaluating the programme and researching mutual recognition agreements relating to energy labelling.

Questions and discussion

Professor Aslanyan noted that cumulative savings capacity was the criterion used in selecting products for labelling, but pointed out that other factors have an effect. He asked to what extent such other factors were taken into account. Dr Jin replied that the calculation of savings capacity was used mainly to set priorities.

Mr Tseng asked about the timing and mandatory nature of the labelling. The reply was that labelling will be introduced sometime in 2004, and that the mandatory information label would complement voluntary endorsement labelling. Those with low efficiency products would not wish to attach labels, and so a voluntary programme for information labelling would be ineffective.

Dr Choi asked about the relationship between CNIS and CECF. He was informed that combining the two organisations had been considered, but had not been approved by government. Generally the CECF endorsement label and the CNIS information label will apply to different products. However, the final decision as to the future of the two organisations has not yet been made.

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Outline of a Consumer Energy Performance Labelling Program in Vietnam

Mr Do Gia Phan of the Vietnam National Standards Association (VINASTAS) presented the work being done by VINASTAS, which is charged with coordinating standardization and consumer protection. He introduced pertinent statistics on the Vietnam electricity supply, which has an installed capacity of around 9,000 MW. Some DSM programmes were introduced in 1999, but to date energy performance labelling and MEPS have made little progress.

Energy labelling is seen as an important tool for the consumer, who is the most important stakeholder. But labelling needs to be uncomplicated.

The labelling scheme will be voluntary, with manufacturer support and government involvement.

Lighting products are the most important, as especially in the countryside lighting may be the only use for electricity. In the country as a whole, over half the total electricity use is for

lighting, and there is a large potential for improvement of efficiency. Compact fluorescent lamps will be the first target product for energy labelling.

Voluntary endorsement labelling is considered the easiest to design, as such a scheme is flexible and avoids bureaucracy. The time required for preparation is estimated to be six months, plus another six months for implementation. The label will be simple, and based on achieving a target efficacy (expressed in lumens per watt) and a minimum lifetime. The target may be made more stringent in future. Vietnam is hoping to benefit from international experience, and is looking for international assistance and cooperation.

Questions and discussion

Professor Aslanyan noted the major savings potential from lighting products, but queried the relatively high capital cost of compact fluorescent lamps. However, in Vietnam electricity is also expensive, at around 5¢ per kWh, and so the payback on a CFL costing \$3 would be around two years.

Dr Wiel asked about the present stage of the programme. It is in the stage of negotiating with manufacturers, and so the scheme is expected to be completed sometime in 2004.

Dr du Pont remarked that in Sri Lanka the electricity utility provides CFL's, recovering the money from electricity bills over one year.

On the question of lamp quality, Mr Soriano pointed out that some 75% of all CFL's come from China, and that many are of very good quality. An official quality programme is coming.

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Mandatory Energy Efficiency Performance Program for Appliances and Equipment: the Present and Outlook.

Dr Robert Hu of ITRI presented a paper co-authored by Chwan-Shing Huang of TERTC and Feng-Hui Chuang of the Energy Commission, Ministry of Economic Affairs, Chinese Taipei. The presentation covered the background to energy efficiency in Chinese Taipei, the standards in place, the present status of energy efficiency measures and the outlook in respect of energy performance labeling.



*Mr Phan, Dr Hu and Dr Jin
during discussion on their presentations*

In Chinese Taipei, over 96% of energy (oil, LNG, coal, etc.) is imported from overseas. Electricity by far is the most common energy used (47% in 2002), followed by petroleum (39 % in 2002). In the year 2002, industries consumed 58% of energy, residential & commercial sectors consumed 18% and the transport sector consumed 15%.

Electricity rationing frequently occurred during the summer time. An estimated 35%

to 40% of peak load was consumed by air-conditioning systems.

Having suffered from the two Oil Crises in 1973 and 1979, it is appreciated that, improving and enforcing energy efficiency & conservation will help the economy, reducing the dependence on energy imports. Accordingly, on 8th August 1980, the “Energy Management Law” was promulgated by the President of Chinese Taipei. It was revised on 31st January 1992 and 30th January 2002.

In Chinese Taipei, most of the energy standards are established as mandatory minimum energy performance standards. Chinese Taipei has implemented MEPS on several items over the past 20 years.

Items currently regulated are:

- Ø Small air-conditioners (window type or split-type)
- Ø Package type air-conditioners
- Ø Refrigerators
- Ø Induction motors
- Ø Fuel economy for automobiles and motorcycles
- Ø Diesel engines for fishing-vessels
- Ø Fluorescent lamps
- Ø Chillers
- Ø Boilers
- Ø Building envelope

Items that will be regulated or revised in the near future include:

- Ø Fuel economy for automobiles and motorcycles
- Ø Chillers

Details of the process for developing and implementing mandatory energy efficiency standards requirements were shown.

The enforcement of mandatory energy efficiency requirements is different depending on whether the product class is deemed to be a Commodity Product or a Non-Commodity Product.

For Commodity Products, the Energy Efficiency Standard is established by the Energy Commission, but regulated by other government units (Bureau of Standards, Metrology and Inspection — BSMI, etc.) Examples of Commodity Products are air-conditioners, refrigerators, fluorescent lamps & automobiles.

In the case of Non-Commodity Products, the Energy Efficiency Standard is still established by the Energy Commission, but is regulated & managed by a designated NGO (Such as ITRI, an Industry Association, etc.). Examples of Non-Commodity Products are water chillers and boilers. It may not be possible to test non-commodity products in existing laboratories, in which case they are required to include facilities to enable measurements to be made on site using a mobile test rig.

Chinese Taipei has implemented mandatory energy efficiency management for appliances as well as on other equipment for over 20 years. Over that period, the energy efficiency of products has been improved a lot, which has contributed to national energy savings. Both Information-type Labelling (Energy Label, mandatory) & Endorsement-type Labelling (Energy conservation Label, Voluntary) have been used by Chinese Taipei. Recently, study and analysis has been started to consider using Comparison-type Energy Labelling.

The Energy Management Law and several regulations concerning mandatory energy efficiency control are currently under revision to establish more clear targets and increased success for energy conservation.

The different types of energy labelling may be classified as Endorsement, Continuous comparison, Categorical comparison and Information. Chinese Taipei is actively considering introducing categorical comparison labels; some trial designs were shown.

Questions and discussion

In reply to a series of questions from Mr Asfaazam Kasbani, Dr Hu said that CNS test standards were used, which are similar to US tests. There are about 800 chillers affected by the energy efficiency requirements in Chinese Taipei. ITRI has a truck-mounted test facility for chillers. There are some 25 to 30 chiller manufacturers, of which 12 to 15 have their own test facility, but these represent perhaps 99% of the market. There are about 20 boiler manufacturers.

Professor Aslanyan asked about boiler efficiency under test conditions and in service. Boilers with efficiencies greater than 100% are available, but operating efficiency is often very low in comparison. Dr Hu agreed, with low operating efficiency perhaps being low due to ineffective post-market control, which in turn is due to insufficient funding.

Shane Holt asked about the analysis undertaken when selecting stringency levels and label category limits. Chinese Taipei does look at major overseas economies to try to compare performance databases, but the use of statistical methods is generally more politically acceptable.

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Seminar Discussion Paper

Ir David Cogan, the Seminar Organiser and APEC Energy Efficiency Test Standards Coordinator, introduced the discussion paper. An historical analogy was used to make the point that energy labels need to be associated with genuine value, need that value to be maintained and enforceable, and should also be widely recognised.

It is possible to estimate the value of a label, and examples given ranged from 2% of item value to around 10%. Therefore the labels do have real worth. However, it is possible to apply labelling inappropriately.

For recognition and acceptance, ideally labels should not go “out of date” as has happened in some instance. They should be applicable to as many products as possible (although this can be overdone) and ideally the design should be useable as both an endorsement and a comparison label. For widest application labels should be multi-cultural and multi-national.



Ir Cogan presenting the Discussion Paper

The enforcement and monitoring of energy labelling depends on the conditions in each economy. In theory, mutual recognition is in place. A truly common test protocol could assist enforcement by extending “test once, sell anywhere” to “fail once, banned everywhere.”

A brief survey of labelling activity in APEC member economies shows that the most commonly labelled product areas are refrigerators (labelled in 17 member economies), air-conditioners (15), lighting products (13), office equipment (12) and water heaters (11).

Having given this background, Ir Cogan proceeded to explain out the plan for the rest of the seminar. Ideally the seminar would agree on a vision that defines the goals of the region in respect of energy labelling. The vision might include having a single test protocol for each product class, but an alternative could be having a single label with mutual recognition of different test protocols where the reason for the difference was the need to cater for new technology. Full exchange of information could also be a feature of any vision.

A number of considerations that could affect plans for labelling cooperation were listed. These included the fact that ISO and IEC deal with only test protocols, and an alternative publisher would be needed to produce regional standards specifying energy performance limits or details of labelling requirements. Standards produced by more than one economy tend to be more widely applicable than standards produced by only one economy. On the other hand, the optimum size for a Standards working group is between 5 and 15. Labels tend to proliferate as people like designing them, whereas for best recognition by consumers the number of different labels should be minimal.

The presentation finished with a brief explanation of how ideas generated by the seminar would be taken up by APEC fora.

Discussion

The question was raised as to why international efforts have been largely ineffective to date. One possible reason is the lack of information flow.

The earlier proposals for benchmarking were queried. It is very technical and intensive work, and may not be what is most needed.

With regard to developing a multi-national label, it was asked whether there was any problem with copying energy labels. Generally, designs from a national standard are open to wider use upon request, but permission to copy exact designs is required. The US EPA protects its “Energy Star” label, but is keen for it to be adopted by other countries (which are then expected to protect the use of the label and check it is being applied properly). Overall, there seems no real obstacle to having multi-economy or even regional labels. Experience with the joint Australian and New Zealand label has generally been positive.

It was commented that the only valid reason for having a common label would be if there were a common consumer market. However, it was pointed out that adoption of an existing label can save a lot of development effort and time. There is a lot more to energy labelling than the energy label itself that the consumer sees, including a huge amount of work and technical detail.

There were some doubts expressed about the ability to move to one testing protocol, due to different usages and climate patterns and the different degree of development of member economies. However, it would be good for some economies to lead the way, with others following and adopting the energy standards as and when appropriate.

While there are varying requirements for labels in different economies, much of the development work on labels needs to follow similar courses, and it would be helpful if some general guidelines were readily available.

The seminar was seen as a useful experience, but due to the necessarily limited number of people who may attend such events, it would be good if the lessons learnt could be disseminated electronically, possibly via the CLASP website.

The seminar moderator, in summing up, posed the questions:

- Ø Why do international efforts appear to have been ineffective so far?
- Ø Does the usefulness of benchmarking compensate adequately for its technical intensiveness?
- Ø What international efforts would be appropriate?

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ASEAN Energy Label – Status and Plan



Dr Sinsukprasert

Dr Prasert Sinsukprasert of the Department of Alternative Energy Development and Efficiency (DEDE), Thailand showed the label being developed by ASEAN. Seven members of ASEAN are also APEC member economies (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam; the other ASEAN members are Cambodia, Lao PDR and Myanmar). Energy Efficiency & Conservation and New & Renewable Sources of Energy are two of four groups working on aspects of energy under a senior officials committee and alongside the ASEAN Center for Energy.

The project has a project team with input from national working groups, all overseen by a steering group. Taking into consideration a relative shortage of funding, it was decided that the label would be a voluntary endorsement type that could be used alone or with national labels. It is to be in line with other international standards, and the

project team wishes to cooperate with other regional and national “standards and labelling” activities. It is aiming for world-wide recognition for the label.

The project team has identified a number of discrepancies between the requirements of member economies, but consider them solvable. The differences include:

- Ø Not all countries have standards, although most use standards based on ISO/IEC documents;
- Ø Not all countries have testing laboratories;
- Ø There are some voltage differences (varying between 220 and 240 volts) and differences in frequency (50 and 60 Hz)

Ø Terminology differences and energy efficiency determinants (i.e. watt loss, efficacy) also exist.

However, because of proximity and similarity of conditions, Dr Sinsukprasert considers that it is easier to resolve the differences within ASEAN than it would be within APEC.

The products selected for the initial labelling round are (electromagnetic) ballasts for fluorescent lamps, refrigerators and air-conditioners, to be followed by motors and fans. The label should appear on ballasts in 2004-2005, on refrigerators in 2005-2006, and on the other three products in 2006-2009.

The label design has been endorsed, and as an associated activity ASEAN awards for high efficiency ballasts have been initiated.

Questions and discussion

Dr du Pont asked about the discrepancy between the political mandate at ASEAN level but the apparent shortage of funding. Dr Sinsukprasert explained that the budget is smaller than the mandate. Because it is an ASEAN initiative, it is not possible to get funding from, for example, Thailand's energy efficiency fund. External funding is needed, but the political will is there. Manufacturers are aware of the programme, and are willing to support it, but the project group did not accept funding from manufacturers in order to stay neutral.

When asked whether the label would help to sell the product, it was explained that it would be possible to test once, and then if the product met the standard it would be possible to add the endorsement label to any national comparative label, using an appropriate translation of the test results. But the first step is to ensure coordination.

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The Energy Label Program and Policies of Chinese Taipei

Ms. Ching-hwa Meng of the Energy and Resources Laboratories, Industrial Technology Research Institute introduced the energy efficiency endorsement labels used in Chinese Taipei.

In the economy, energy use has tripled in the last 20 years, with growth particularly in the residential, commercial and transport sectors. Dependence on electricity is increasing constantly, making energy efficiency of appliances an important issue.

Chinese Taipei has MEPS for air-conditioners, refrigerators, cars, fluorescent lamps and some other product groups. The MEPS requirements are being supplemented by the voluntary endorsement labels.

Ms Meng described the process for development of the label qualification parameters for a product group, including the development of standards for the testing of product by certified laboratories.



Ms Meng presenting her paper

Using the MEPS level as a base, the endorsement level is set at a more stringent level, typically 15% more efficient, such that around 20% of models on the market qualify for the label.

In 2001, four types of products were promoted: air-conditioners, dehumidifiers, clothes dryers, and refrigerators. In 2002, another 4 types of products were promoted: namely, TVs, clothes washers, electric fans, and fluorescent lamps (> 32 W). In 2003, fluorescent lamps ($\leq 32W$), hair dryers and hand dryers were promoted.

Details were given of the technical requirements for each of the product classes.

Promotion activities were described. The first goal is to increase the labels' visibility, an intermediate goal is to make the use of labels more popular, and the final goal is to make consumers purchase labelled products widely, and strive to make the entire population conserve energy. The targets of the promotional plans for the Chinese Taipei energy conservation labels include the industrial sector,

consumers, and the public sector, and different series of activities have been prepared for each of these groups. The promotional means used include use of the media, high-profile activities, promotional publications and the website. Photographs of promotional events were shown.

Questions and discussion

In answer to a question from Dr Wiel, some further examples of qualification requirements for different product groups were given. The goal is to choose the top of the pyramid, and the level can be shifted according to the proportion of products on the market. The criteria are set by a committee, and generally between 10% and 30% of models will qualify for the label.

Mr Tseng asked whether the relatively small number of models bearing the label restricts choice and makes it difficult to promote the label. It was admitted that this was so, and additional promotional means, such as subsidies or discount coupons, are being considered.

Mr Winton asked about the promotions aimed at schoolchildren. Children do have some influence over the choice of appliance.

Mr Holt wondered about the link between MEPS and the label. Might the qualifying level for an endorsement label become a future MEPS? At present the two systems are run in parallel. In future, it is possible there may be comparison labels for endorsed products.

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Energy Standards & Labelling Programmes: UNDP's Perspective

Manuel Soriano gave an introduction to the UNDP's Millennium Development Goals, which provide the overarching principles to their projects. One of the goals is "Energy and Environment for Sustainable Development". The UNDP work on energy complements that of the GEF in the climate change field. Energy efficiency standards and labelling are part of market transformation towards sustainable development. Therefore, the UNDP will support projects on capacity building, energy conservation and energy efficiency that result in lasting market transformation and permanent shift. They will support both national and regional projects for energy efficiency standards and labelling in developing countries, and national programmes that are likely to remove barriers to energy efficiency.

Programmes that foster energy efficiency standards and labelling are regarded as cost effective, but they are concerned that there is only gradual improvement in the efficiency of new energy consuming appliances and equipment sold and used in Asian economies. The average energy efficiency is low compared with other parts of the globe. Barriers to the uptake of more efficient appliances and equipment include the absence of appropriate policies. But it is considered practical for economies to harmonize and make their mandatory energy efficiency requirements compatible.

Mr Soriano listed the desirable outcomes of projects and the types of projects that UNDP would be likely to support. He also gave an example of what a regional project could feature.

Questions and discussion

In reply to a general question from Mr Harrington, about how to ensure that consumers' needs were met, it was said that UNDP and GEF encourage participational projects, in which case they would need to have the backing of all relevant stakeholders.

Professor Aslanyan pointed out that the cost efficiency of energy efficiency standards and labelling projects is said to be very high, but asked what methodology is available to assess the costs and benefits. In response, it was said that GEF projects focus more on the barriers, such as the government policy. The cost depends upon the situation. With respect to methodology, the most sophisticated is that practised in the USA. This shows a benefit:cost ratio of 2.8:1, and 750:1 for the government. However, the amount spent on the analysis was typically half a million US dollars. Post standard analysis could not find any increase in cost, so the industry forecast on which the analysis was based is almost certainly overstated, and the benefit:cost ratio is in practice much more favourable. Dr du Pont reported results from Thailand, where the cost of saved electricity was one quarter the cost of supply and one fifteenth the cost of new capacity. The benefit:cost ratio was 2.4:1.

Professor Aslanyan stressed the need for a common methodology, as, for example, the choice of discount rate makes a difference. Dr Wiel responded by pointing out the discount rate is not the most significant determinant, as it affects the stream of costs as well as benefits, but in principle he agreed with the points made.

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CLASP Cooperative Programmes, Present and Future

Dr Stephen Wiel gave a review of CLASP — the Collaborative Labeling and Appliance Standards Program — and its organization, activities, plans and goals.

The CLASP Mission is to “Facilitate the adoption of energy efficiency standards and labels in developing countries, transforming the manufacture and sale of appliances, equipment and lighting worldwide”

The CLASP criteria for effective energy performance labelling and minimum energy performance standards are that an effective energy efficiency policy must focus on a predominance of energy use, have high, cost-effective impact and must sustainably transform markets. The programmes are seen to result in a shift in the market towards improved energy efficiency, and investment in S&L is better than investment in new power production.

The CLASP Partnership comprises a governing board, a technical advisory committee, a secretariat in Washington DC and partners, the latter including implementing partners, sponsors, industry and partner economies.

CLASP operates at global, regional and economy level, accounting for around 10, 20% and 70% of its activity respectively.

Regional initiatives are such things as regional training workshops and harmonization



Seminar participants

projects. Economy-level technical assistance includes support for development of new standards and labels, in-country training, support for consumer research, national workshops and training. CLASP Services Cover All Steps in the Process of Developing Standards and Labels.

Cooperation and harmonization activity is expanding, due in part to the diverse motivations for harmonization that exist.

CLASP 5-Year Goals include a global network of collaborators, higher awareness of energy efficiency standards and labels and their benefits, greater institutional capability for developing, maintaining, and upgrading efficiency standards and labels and more rapid adoption of energy efficiency standards and labels.

Questions and discussion

Mr Asfaazam Kasbani queried why CLASP deals with only household products, and why not industrial equipment? Dr Wiel said that was an impression only, perhaps gained from the CLASP website that concentrated on household items, and that CLASP does have an interest in industrial products. In response to a further query, he announced that a model consumer survey is in preparation.

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Energy Labels and the Consumer – Lessons from Twenty Years Living with Labels

Mr Les Winton, a consultant on the Australian energy labelling programme, pointed out that labels need to communicate with consumers who are mainly neither technically-minded nor interested in energy efficiency. And while there are doubtless cultural differences between consumers from different economies, the underlying principles of label design may be the same.

Many consumers may say they care about energy, but the real process of making a purchase may affect its actual importance. Other factors take priority in the purchase decision process, and may produce a short list; in such an event the label may be a deciding factor. It is therefore necessary to undertake surveys to check the effectiveness of label design. This is becoming more important in Australia, where the labels tend to be designed by men but more and more purchase decisions are being made by women.

Mr Winton also noted that for the sake of familiarity, it is desirable for all labels — comparative energy performance; endorsement; even water efficiency — to share common features so they may be interpreted the same way.

Questions and discussion

Mr Harrington postulated that the ultimate decision on label design may be made by a bureaucrat, in which case might not the survey work be undone. Mr Winton responded by saying that labels do not have to be perfect, so it was only necessary to check that the final decision was not a terribly bad one.

Mr Tseng queried the distinction between acceptance of labels between electric appliances, gas appliances and vehicles. Mr Winton felt that labels will become harmonized, because consumers prefer to have “like” labels. Familiarity is a factor, although that is not necessarily a good thing. The Australian vehicle labels do not have stars, only litres per 100 kilometres. So the label is not well so known, and it is not used in the same way but with a different agenda.

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Mexico's Energy-Efficiency Labelling Experience

Eng^t José Pedro Guzmán Valenciano gave an introduction to CONAE, Mexico's National Commission for Energy Conservation, and its activities.

CONAE was created in September 1989 in order to promote, support and elaborate mandatory standards, strategies, measures and actions which facilitate energy conservation and renewable energy use in Mexico. There are now 18 energy efficiency standards in force, 50 authorized laboratories and 204 inspectors. At present, there are 9 development projects for energy standards, comprising 2 new and 7 revisions.

The energy-using products and systems regulated via a Mexican Official Standard (NOM) are: water heaters, room and central air conditioners, pumps, refrigerators and freezers, one- and three-phases electric motors, fluorescent lamps, clothes washers, non-residential buildings and lighting systems

Energy efficiency standardization in Mexico began in 1993 with refrigerators, room air conditioner and three-phase electric motors. Refrigerators and air conditioners were labelled.

There have been three label designs. The first two were similar to the European design. The first design also included an indication of running costs. This was dropped as the electricity tariffs changed too quickly and the rates shown on the label were not representative.

The third style of label, which is used at present, is similar to the Canadian and USA label. The original label for domestic pumps was quite different, but will be brought into line with the others. There is a label for non-residential buildings based on heat gain through the building envelope.

CONAE is a partner of CLASP, and is participating in harmonization efforts in Latin America, notably on the COPANT "152" committee on Energy Efficiency". CONAE will also continue with the North America harmonization standards.

Questions and discussion

Eng^t Guzmán said the a frequent question was why Mexico doesn't have a label promotion programme. This is because in the Federal Metrology and Standardization Law (Mexican Law), the label is mandatory, and the label must be part of the standard. Therefore promotion is officially deemed unnecessary.

Another question is; "Why did Mexico adopt the USA and Canada design in the label?" The answer is because they are Mexico's commercial partners. Dr du Pont asked whether there had been any research on the revised label for consumer acceptance and understanding. Eng^t Guzmán replied that understanding was difficult, and that stars were more popular.

Dr Choi asked whether the testing of air-conditioners may be done by manufacturers. The answer was "Yes".

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The Chilean Energy Performance Labelling Initiatives

Rubén Muñoz Bustos of Chile's National Energy Commission gave an overview of energy use in Chile, which is forecast to nearly double between 2001 and 2008. Chile was among the first countries to begin the energy sector reforms, with privatisation at the end of the 1980's. There is an open energy market, with no investment obligations for companies. The State plays a regulatory role.



Mr Muñoz Bustos

Electricity generation is competitive, with sources and technologies in the sector competing according to profitability. However, projects must comply with environmental regulations. Consumers of over 2 MW negotiate their own prices, while smaller consumers enjoy regulated prices.

The Chile energy policy with regard to electricity is for a completely private and competitive energy market with a real price system and promotion of new investment and technologies. However, economic efficiency achieved by markets system does not ensure energy efficiency, and therefore specific programs or incentives are necessary.

Chile has initiated energy performance labelling. So far this has so far identified test protocols, considered the legislation requirements and undertaken preliminary market studies.

Standards have been developed for appliances (12), illumination (6), air-conditioning and heating (7), motors, pumps, transformers and cables. The standards are based on a variety of national and international standards.

There is a proposal to modify the legislation that empowers the Electricity and Fuels Superintendence (SEC) of the National Energy Commission to include energy performance labelling.

Market studies were undertaken to evaluate the feasibility and potential benefits of applying an energy labelling and MEPS programme, and to set the implementation priorities on electrical appliances according to their impact at economy level. The greatest benefits — estimated at US\$ 321 millions or 3.561 GWh per year cumulative would come from a programme that includes both labelling and MEPS. The priority list refrigerators and freezers, clothes washers, air conditioners, water heaters, pumps, dryers and dishwashers.

Decisions will have to be made concerning the type of regime, whether mandatory or voluntary or case-by-case; the design of the label; the degree to which the label ought to be harmonised, and the amount of international cooperation desired.

Questions and discussion

Mr Tseng asked what the projected savings amounted to in economy-wide terms. Mr Muñoz said they would accumulate to 6% of residential consumption.

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Update on the Philippine Energy Labelling Programme for Household Appliances and Lighting Systems

Eng^t Arturo Zabala, from the Philippines Lighting and Appliance Testing Laboratory (LATL) presented the Philippine Energy Standards and Labelling Programme for Household Appliances and Lighting Systems. This is a government-private sector driven initiative being implemented jointly by the Department of Energy through its Lighting and Appliance Testing Laboratory and the Department of Trade and Industry – Bureau of Product Standards (BPS).

The appliance energy standard and labelling programme is a combination of regulatory efficiency standards and energy labelling. Some products like air-conditioners and fluorescent lamp ballasts are covered by both efficiency standard and labelling. Others like refrigerators and freezers and compact fluorescent lamps are covered just by the energy label requirement.



*Eng^t Zabala
from LATL, Philippines*

The programme uses the comparison type of labelling (with detailed information) which allows the consumers to compare the energy cost of competing brands and models of similar size, capacity or rating and other features.

Eng^t Zabala provided details of the requirements for air-conditioners, refrigerators and freezers, electromagnetic ballasts for fluorescent lamps and compact fluorescent lamps (CFLs). Because of reported early failures and proliferation of uncertified CFLs, the programme requires manufacturers and importers to indicate in the packing materials product ratings such as lumens output, lumen maintenance, wattage rating and average life in hours.

LATL has been tasked with testing all brands and models of room air-conditioners, refrigerators and freezers, fluorescent lamp ballasts and compact fluorescent lamps sold in the market to verify ratings. The Bureau of Product Standards enforces compliance. The Philippine Appliance Industry Association (PAIA) and the Philippine Lighting Industry Association (PLIA), coordinate with manufacturers, importers, dealers and retailers on their

programme to improve their products and assist in monitoring the implementation of energy labelling.

LATL is the Philippines partner in the Efficient Lighting Initiative (ELI), an energy efficiency programme funded by the Global Environment Facility (GEF). ELI instituted a logo that provides consumers with a quick and easily identifiable icon for efficiency and high reliability for lighting products. In order for lighting manufacturers' products to carry the logo, their products have to meet stringent ELI technical specifications. As part of the ELI testing programme, LATL obtained accreditation for energy performance testing of CFLs.

Energy efficiency standards are developed by the appropriate committee of the Bureau of Product Standards, normally composed of representatives from the government, industry

associations, manufacturers, academe, professional organizations, consumer group and other stakeholders. Two industry associations, namely, the Philippine Appliance Industry Association and the Philippine Lighting Industry Association, have been actively supporting the formulation and implementation of related Philippine national standards.

Plans for the near future include review of the air-conditioner standard and label, the introduction on refrigerator MEPS, establishing criteria for determining the efficacy of tubular fluorescent lamps and preparing a standard for them. It is proposed to introduce the certification of industrial fans and blowers capacity and performance in terms of air flow rate and conduct in-house performance testing to establish criteria in determining efficiency and develop a national standard on the labelling of household electric fans. Further research on CFL's is planned, as is an "Energy Guide" brochure on the list of certified products, technical requirements, test methods and tips on how to buy and use labelled products.

Questions and discussion

Mr Harrington asked about the colour of the ballast label (black and white) and commented that a rating for rapid start 230 V fluorescent lamps may prove unnecessary. He also suggested that the Australian and New Zealand requirements for fluorescent lamps may be worth considering.

Dr du Pont considered the use of an energy efficiency factor for refrigerators overly complicated. This will be looked at as part of the planned review. Dr du Pont also queried the coverage of CFL requirements of up to 60 watts rating. This limit was taken from the IEC standard.

Dr Prasert asked about the difference between the ELI and ASEAN requirements for CFL's. Eng^t Zabala pointed out that the Philippines label is mandatory, whereas the ELI label is voluntary and has more stringent requirements. The test protocols are the same.

Dr Tsau asked about the Philippines implementing agreement, and who used it. The reply was that it formed a type of contract between government, manufacturers and importers.

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Household Electric Refrigerating Appliances for Kim-chi and New Items

Dr Jun Young Choi of the Korea Testing Laboratory, Korea outlined the energy efficiency labelling and standards programme which has been enforced since 1992 for particular appliances and lighting equipment.

The initial products covered by the programme were refrigerators, room air-conditioners, incandescent lamps and fluorescent lamps. There are now eight more product classes covered, including clothes washers, dishwashers, electrical cooler and heater for drinking-water (storage type), rice cookers, fluorescent lamp ballasts, CFL's, household gas furnaces and *kim-chi* refrigerators.

The Energy Efficiency labelling program rates each particular model (or type of product) on a 5 level scale of efficiency. Information about energy consumption must also be displayed on any technical material associated with the sale of the products. The labelling is mandatory.

In 2004 the label for refrigerators, air-conditioners and rice-cookers will change to one that shows the margin by which the model's efficiency exceeds MEPS requirements. Also from 2004 manufacturers will no longer have to send their models to an independent authorized laboratory to be tested.

Dr Choi then described the Korean food *kim-chi* and told how special fermentation and storage units especially for *kim-chi* were becoming popular. He went through the special provisions made for the energy performance labelling of these appliances in the light of their special characteristics.



Dr Choi

Questions and discussion

Dr Sinsukprasert queried the need for a change to the labels and the associated cost. Dr Choi noted that the change applied only to refrigerators and air-conditioners, where the market had shifted such that with the old labels there were available only models with the highest energy efficiency grades. There is now a more stringent MEPS level. In response to a follow-up question from Dr Wiel, it was confirmed that there had been extensive consultation on the new label design.

Professor Aslanyan asked how much generating capacity it is taking to supply all the *kim-chi* refrigerators, but this statistic is not known.

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Energy Efficiency Labelling in Russia



Professor Aslanyan

Professor G. Aslanyan of the Centre for Energy Policy outlined the energy situation in Russia. The Russian economy is now, since 2000, in a stage of strong growth after difficult transition years. It is a major energy producer, but while it currently has an energy supply surplus, is projected to require between 32% and 49% more electricity by 2020. A low level of energy efficiency represents a problem, and improving energy efficiency is part of the policy, as electricity demand is due to exceed capacity in 2005. There is a large technical potential for improved energy efficiency, over a quarter of the potential savings coming from the residential and commercial sectors. These are the cheapest savings.

However, there are barriers due to low government interest in energy conservation and lack of information to consumers.

The former USSR did have energy efficiency standards, but these lost their mandatory status during the transition. But after a period of having inefficient appliances, currently available models do conform to the 1991 MEPS. Voluntary energy efficiency labels appear in proliferation, but these are mostly unofficial ones.

The law “on Energy Conservation” of 1996 prepared the way for obligatory labelling and MEPS. Since then efficiency standards and energy information standards have been prepared, plus a standard on comparison of indicators. Labelled products will be refrigerators, clothes washers, cooking appliances, air-conditioners, water heaters, clothes dryers, dishwashers and microwave ovens. The EU format is preferred for the label. Russia is keen to cooperate internationally on energy performance labelling.

Questions and discussion

Mr Tseng obtained clarification that Russia at present has a high level of energy intensity and low energy efficiency.

Mr Winton asked about public interest in energy efficiency. This is increasing, for while electricity tariffs are low by international standards, they are high on a practical purchasing power basis.

Dr Tsau noted that Russia is a major energy producer, but asked for how long that would be. Professor Aslanyan replied that Russia has huge resources of energy, but expensive to extract. The era of cheap gas is finished.

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The South Asia Regional Initiative on Energy Performance Harmonization



Dr du Pont

Dr Peter du Pont from the Bangkok office of Danish Energy Management A/S gave the SARI harmonization initiative as an example of a cooperative energy performance labelling programme. Participating countries are Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka, with funding from USAID.

The first harmonization meeting was held in Colombo in August 2002, and examined test protocols for refrigerators in India and in Sri Lanka. The second harmonization meeting was in Chennai, India in September 2003. This meeting gave priority to refrigerators, but also included discussions on fluorescent lamp ballasts, compact fluorescent lamps and ceiling fans.

A training Course on “Harmonization of Standards and Labeling Programs” was held in Bangalore from 27th to 31st October 2003. At the course, there were consensus agreements on objectives and rationale for harmonization of test protocols, strategy and Structure for regional harmonization and endorsement of the “Harmonization Road Map”. There was a clear conclusion that it is possible to harmonize standards for energy performance testing. It will, however, be desirable or even necessary to obtain commitment from the governments, and it is planned to form a high-level intergovernmental committee which may make such commitments.

Questions and discussion

Eng^t Zabala asked about the certification of lighting products in South Asia, and what standards are used. Dr du Pont replied that the Sri Lanka standard is based on IEC. At first a university laboratory was used, but then they set up a purpose-built laboratory at NRDC. Regarding the limits set, while the IEC standard does not set limits, the ballasts in Nepal tend to have aluminium windings so even those ballasts made to meet the quality specified in the IEC standard would have improved energy performance. However, there may be a move towards adopting something like the ELI specification.

Mr Phan asked whether all the CFL's circulating have labels. Only Sri Lanka currently has a programme. Of around 2,200,000 units sold, 700,000 are certified and have a one year warranty. Labelling started in July 2003, and the idea is that certified product will be labelled.

Dr Sinsukprasert asked whether the two thirds of CFL's sold that are not certified were poor quality or the suppliers could not be bothered to obtain certification. Dr du Pont replied that it was suspected that quality is poor, as the price is much less. However, testing had not recently been undertaken.

Dr Sinsukprasert also asked about the selection of products for the harmonization road map. The selection was done by looking at product classes that already had reasonably close standards.

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Top Runner Program and Labelling in Japan

Mr Takeshi Sekiyama, Energy Conservation Center Japan, presented the Top Runner Program, which is one of the measures taken under the Energy Conservation Law that is aimed at reducing or reversing the increase in energy consumption in Japan.



Mr Sekiyama (right) of ECCJ with Ms Miyazaki of METI, Japan

Target products for the Top Runner Program are ones designated as machinery and equipment which are commercially used in large quantities in Japan, consume significant amount of energy on use and intensively required with energy consumption efficiency

In the Top Runner Program, the energy performance of models on the market are compared. The highest energy efficiency level achieved by a model is established as a target, and a target year is also selected. During the target fiscal year, the sales-weighted average efficiency of models sold by a manufacturer or supplier must be at least the target efficiency level.

Certain products are also labelled. These include air-conditioners, electric refrigerators and freezers, space heaters, gas cooking appliances, gas-fired water heaters and oil-fired water heaters. In addition, passenger vehicles, freight

vehicles, fluorescent lights, copiers, computers, magnetic disk units, VCR's and electric toilet seats must contain energy performance information in product literature.

The voluntary labels come in two separate colours. An orange-on-white symbol indicates the model does not meet the target efficiency value. Models that do already meet the target efficiency value may have a label with a white-on-green label. While labelling is not mandatory, 100% of manufacturers place labels in catalogues and other product literature. Retailers are also active in promoting the green labels. The proportion of air-conditioners carrying green labels rose to 44% in early 2002, while for refrigerators and freezers the figure was 62%.

For some product classes, the energy efficiency requirement is set for standby power.

The presentation included details of the target efficiency values and the value of energy savings. It is expected that the number of product classes covered will increase.

Questions and discussion

Dr Wiel obtained clarification that the "achievement rate of energy conservation standards" shown on the label refers to the model carrying that particular label.

Mr Winton asked how it was possible to get the information needed to calculate the sales-weighted average efficiency. Quite simply, the manufacturers have to give it. Mr Cogan observed that there is a similar requirement to supply energy efficiency information and sales figures in New Zealand.

It was explained to Mr Harrington that in Japan there is less of a distinction between "mandatory" and "voluntary" than there is in economies such as Australia.

Mr Tseng asked about to whom the Top Runner Program requirements applied. It applies to all imported products, but not to exports. Suppliers may not "pool" their products, so each supplier must meet the sales-weighted efficiency target.

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Energy Labelling for Lighting and Experiences in Chinese Taipei

Dr Hsiao Horng-Ching talked about energy labelling with an emphasis on lighting and recent developments in that area. He pointed out that traditionally, consumers have obtained guidelines on purchasing appliances from advertisements in various media, consumer magazines and testing reports from consumers' foundations. The main concerns have been safety and cost. However, increasingly in the future they will be guided by labels and marks.

The purposes of energy labels are to provide consumers with information and to encourage consumers to buy the most energy efficient appliances. Labels work by influencing consumers' purchasing decisions and manufacturers' production and marketing.

Appliances suitable for energy labelling are those that consume significant amounts of energy, are sold in large numbers, where the purchaser also pays the energy bill and where the energy efficiency of the appliance can be improved.

Dr Hsiao showed examples of the several different classifications of energy labels, including endorsement labels, comparison labels and labels that solely provide technical information. This was followed by a tour of energy labels from different parts of the world before showing the Chinese Taipei information labels and the new voluntary endorsement label, which indicates a performance index over 15% better than the energy efficiency standard.

Dr Hsiao then showed an example of the improvement in lighting quality and efficiency possible in a schoolroom, and pointed out that as lighting is around 15 to 20% of the total electrical load in Chinese Taipei it is thus a valuable area in which to run an energy saving programme. The key is more efficient light sources, energy saving ballast or electronic ballast and higher efficiency luminaires, coupled with standards for good lighting quality and energy efficiency standards for lighting equipments, both mandatory and voluntary. This should be supplemented by testing procedure, effective market monitoring and good software design for lighting engineering.

USA and Chinese Taipei lighting standards were compared in detail.

Finally, Dr Hsiao outlined recent developments in lamps and ballasts that enable more efficient lighting installations to be achieved. However, he concluded that the most important element was actually consumer awareness.

Questions and discussion

The matter of recycling was raised. In Chinese Taipei this is an activity carried out by the Environmental Protection Agency.

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The Development of the Australian Label

Les Winton of Artcraft Research, Australia told the seminar that Australia has one of the oldest energy labelling programs in existence, dating from 1986. It was first proposed in the late 1970s by the State governments in New South Wales and Victoria, largely because major appliances in Australia account for 53% of residential greenhouse emissions, excluding those from space heating and cooling and water heating. Furthermore, the energy efficiency of most appliances could be substantially improved.

The vast majority of appliance buyers had no idea how much any appliance cost to run and didn't know that the differences in running costs (energy use) between the most efficient and least efficient models were very substantial. But when faced with a few realities, a substantial majority came out in favour of manufacturers being encouraged or required to provide this information.

NSW and Victoria commenced mandatory labelling in the mid 1980s, and in 1992 a mandatory national labelling scheme was finally agreed. The same labelling scheme was voluntary in New Zealand until 2002, when it became mandatory there as well.

Research found that while some consumers would find energy consumption information to be all they needed to compare models or to calculate running cost, a further substantial group needed something more visual and less demanding. Even among the more technically

mindful, they may simply compare energy consumption or cost of running by itself, rather than also looking at the effectiveness or relative size or capacity of the appliances. It was therefore decided to develop a graphic device (the star band) to enable the relative energy efficiency of any model to be assessed against others in its class.

Government supported the introduction of the labels with a TV campaign emphasising the catchcry, ‘the more stars, the more energy efficient’. Other promotion was a series of brochures in appliance showrooms and energy information centres.

The visibility of the mandatory label itself, which has to be on every unit in every store, is important.

The first major review of labelling in Australia in 1990 found ‘crowding’ at the top of the scale as manufacturers had improved efficiency of many models and scrapped poor models. So a revised label was introduced, with algorithms being recalculated to enable appliances to be scaled back substantially. Improvements were also made in the information contained in the body of the label.



Mr Winton makes a point during discussion while Prof Hsiao and Mr Pool listen

In general, the energy rating label programme has been very successful, with the current labels being well-recalled, well-understood and frequently acted upon at an appropriate point in appliance purchase decision-making. Nonetheless, there is still room for improvement, as awareness and involvement levels vary somewhat from city to city, and some aspects of the label could be made to work more effectively.

Due to the consumer acceptance and liking of the appliance label, moves are taking place to copy key design features for labels for gas appliances, water efficiency, houses and even luminaires. In addition a similar design is planned for use as an endorsement label (for use alongside the energy performance label) and even for a “dis-endorsement” label for models that have poor energy performance but are not prohibited by a MEPS.

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Harmonization of Standards - the Australian and New Zealand Experience

Frank Pool, a consultant from New Zealand, pointed out that there were several factors that point the way to increased need for harmonization. As well as the obvious economic and environmental benefits arising from reduced barriers to trade, the whole scale of technological development means that it is no longer practical to expect a manufacturer to operate without reference to what is happening elsewhere.

Mr Pool related the cooperation on energy performance labelling between Australia and New Zealand, and said that the resulting scheme was better than if either one economy had prepared it. A programme or standard devised by more than one economy stood a good chance of being accepted by other economies.

The ground rules that governed the cooperation between Australia and New Zealand were explained, and the results, in the form of standards published, were listed. The use of standards-based legislation meant that the energy efficiency requirements in the two economies were essentially the same, even though the legal frameworks are a bit different. It was suggested that the Australian and New Zealand cooperative programme was a useful example for when wider harmonization is desired.

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Discussion*

Are labelling (and MEPS) programmes better than we think?

- In light of the feeling that the cost of efficient appliances is in the event no more than the cost of inefficient appliances, and much less than the increase claimed by the manufacturers, it was asked whether there are studies of the actual costs resulting from appliance energy efficiency programmes, and if not, should there be some? Responses included:
 - Ø The “Results Center” produced profiles of DSM programmes in the mid to late 80’s.
 - Ø A lot of evaluation or impact studies are available of forecast savings, but while programmes typically budget around 2% to 3% of the total budget for monitoring and evaluation, it is rarely done, and rarely done well.
 - Ø One person knew about two particular studies. One, on electric motors, had higher efficiency motors costing only a very little more to manufacture, so small that the manufacturer absorbed the cost. Another on refrigerators concluded that as a result of the programme, energy efficiency had increased, but so had refrigerator size.
 - Ø Post-programme evaluation needs to compare perceived behaviour and actual changes. In the USA, while 70% claim to understand the label, many read it backwards (and end up going for less efficient products).
 - Ø Several other evaluations were mentioned, but there was still felt that there is a need for systematic surveys, and for a guidebook on how they ought to be conducted.
 - Ø It was pointed out that evaluation is even more important for voluntary schemes.
- A small group led by Dr Wiel will try to define what would be useful in an evaluation report on an energy efficiency project. Drs du Pont and Sinsukprasert volunteered to trial the template and Thailand has some good evaluation data readily available.

Making progress on harmonization

- There was a suggestion to make progress on harmonization by selecting a product group and assembling experts to decide on the essential features of a standard for general adoption.
- There was some discussion on how to select product groups. Experience gained from previous APEC projects indicated that good possibilities are ballasts, CFL’s and air-conditioners, but certainly not refrigerators. An ESIS study on ballasts is due for release in December 2003.

* **Note:** It was decided that participants making personal statements should not be named in this record.

Participation in international standards development

- Korea – would like to encourage greater participation in ISO committees especially for the two air-conditioner standards currently under development. Dr Choi would appreciate learning about experts in your economy for assistance with this.

Comments on the seminar

- It is always possible to learn from the experiences of others, and there is a need for regular meetings, perhaps every 2 to 3 years. The meetings could benchmark the progress being made to wider adoption of labelling programmes.



A moment during discussion.

- The Japanese sales-weighted approach was found to be very interesting.
- One participant remarked that there is no right way to do things, we can all learn, can all keep trying. Another agreed there is no right way to develop labels, but on the other hand there are many wrong ways. It could be useful to exchange experiences and information on a more regular basis.
- One participant from Malaysia learnt from the seminar that, while Malaysia is trying to develop voluntary comparative and endorsement labels, it is now realised that voluntary comparative labels are not really likely to end up as a comprehensive scheme. It was also learnt that detailed research into label design is critical, and they are looking for a methodology for label design. Malaysia is also looking for guidance on residential energy end-use survey design, although politico-cultural perspectives may limit the economies from which guidance would be deemed acceptable. But labelling is clearly very important.
- Vietnam feels it has obtained lots of information from the seminar. But there is a need for improved technology transfer from developed to developing economies.
- Thailand considered there were a lot of valuable lessons learned from seminar, in particular from the examples of successful labelling programmes. However, it was felt there is not much progress towards an APEC-wide regional harmonisation programme. ESIS is useful, but in addition there needs to be alignment of standards, and since that might well take ten years, there also needs to be a search for an acceptable way to compare and accept results from different standards.
- Comments from the Philippines included:
 - Ø ESIS is focal point for sharing information, but it needs to have greater engagement.
 - Ø Some of the larger manufacturers and importers should be invited to future meetings of this type.
 - Ø There should be some form of internal support between programmes.
 - Ø It would be useful to set up a cooperation scheme at the technical level to exchange test results.
- A participant from Japan asked about the definition of “labelling” as there was often some confusion. Participants suggested there is no strict definition in English, that labelling activity should not be restricted, and that it should therefore be given a wide meaning, such as all provision of energy performance related information. Japan tends to

distinguish between standards (MEPS) for major products, labelling and systems to transform markets (eg Top-Runner).

- The seminar was a good opportunity to focus on energy performance standards and labelling, and it was useful to see the different roles and approaches between economies. Cost benefit analysis is very useful for comparing options.
It was hoped there would be future seminars, but suggested that speakers had a template to work to, so that they all covered state of development and best practice. It was also thought that a wider range of participants would be an improvement. Perhaps that could be achieved by charging for the seminar.
It was suggested that a suitable topic for a future seminar might be space heating systems, including heat radiators and controls. There are several APEC Member Economies that have areas which experience cold winters.
Given the diverse sources of supply of appliances, it would be nice to have an APEC-wide label.
- The seminar had provided many useful ideas on endorsement labels, and had shown the importance of legislation for endorsement labels and for minimum energy performance standards. A lot of ideas would be taken back from the seminar to China.

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APEC Seminar on Cooperation on Energy Labelling

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List of Separate Papers and Presentations

0. *Seminar Opening Speech* made by Dr Tsau Fanghei, ITRI, Chinese Taipei
1. *The APEC Energy Standards Information System: An Information Tool for Both Manufacturers and Regulators*, Dr Peter du Pont from the Bangkok office of Danish Energy Management A/S
2. *The IEA & its Rôle in Energy Labelling* Frank Pool, New Zealand
3. *Development of Energy Labelling in Malaysia; Past, Present and Future* Professor Faridah bte Mohd Taha Faculty of Electrical Engineering, Universiti Teknologi Malaysia
4. *Singapore's Energy Labelling Initiative for Household Electrical Appliances*, Mr Lim Choon Howe (Alvin), National Environment Agency, Singapore
5. *The Design and Market Research of China's Energy Efficiency Information Label*, Dr Jin Minghong, China National Institute of Standardization, China
6. *Outline of a Consumer Energy Performance Labelling Scheme in Vietnam*, Do Gia Phan, Vietnam Standard and Consumers Association
7. *Mandatory Energy Efficiency Performance Programme for Appliances and Equipment: the Present and Outlook*. Robert Yie-Zu Hu, ERL, ITRI; Chwan-Shing Huang, TERTC; and Feng-Hui Chuang, Energy Commission, MOEA, Chinese Taipei
8. *Discussion Paper for APEC Seminar "Co-operation on Energy Labelling"* David Cogan, APEC Energy Efficiency Test Procedures Coordinator
9. *ASEAN Energy Label – Status and Plan* Dr Prasert Sinsukprasert, DEDE, Thailand
10. *The Energy Label Program and Policies of Chinese Taipei* Ching-hwa Meng, Energy and Resources Laboratories, Industrial Technology Research Institute, Chinese Taipei
11. *Energy Standards & Labelling Programmes: UNDP's Perspective* Manuel L. Soriano
12. *CLASP Cooperative Programmes, Present and Future* Stephen Wiel, Co-Founder and Governing Board Chair, CLASP and Energy Analysis Department Head, LBNL
13. *Energy Labels and the Consumer – Lessons from Twenty Years Living with Labels* Les Winton, Artcraft Research, Australia
14. *Mexico's Energy-Efficiency Labelling Experience* José Pedro Guzmán Valenciano, National Commission for Energy Conservation (CONAE)
15. *The Chilean Energy Performance Labelling Initiatives* Rubén Muñoz Bustos, National Energy Commission - Chile
16. *Update on the Philippine Energy Labelling Programme for Household Appliances and Lighting Systems*, Arturo Zabala, LATL
17. *Energy Efficiency Labelling and Standards — Household Electric Refrigerating Appliances for Kim-chi and New Items* Choi, J. Y. , Korea Testing Laboratory, Seoul, Republic of Korea
18. *Energy Efficiency Labelling in Russia* Prof. G. Aslanyan, Centre for Energy Policy, RF
19. *The South Asia Regional Initiative on Energy Performance Harmonization* Peter du Pont, Senior Energy Consultant, Asia, Danish Energy Management A/S, and Michael McNeil, Lawrence Berkeley National Laboratory, USA

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- 20 *Top Runner Program and Labelling in Japan* Takeshi Sekiyama, Energy Conservation Center Japan
 - 21 *Energy Labeling for Lighting Field and Experiences in Chinese Taipei* Hsiao Horng-Ching
 - 22 *The Development of the Australian Label* Les Winton, Artcraft Research, Australia
 - 23 *Harmonization of Standards — The Australian and New Zealand Experience* Frank Pool, Frank Pool Consulting, New Zealand

Communiqué
from the
Seminar on “Co-operation on Energy Labelling”
APEC project EWG 3/2003

The seminar on “Co-operation on Energy Labelling” was held in Kaohsiung, Chinese Taipei from 17th to 19th November 2003. It was attended by over 30 participants from 16 APEC member economies.

In his introduction, the Moderator for the Seminar, Dr Fanghei Tsau of the host organisation ITRI, pointed out that energy efficiency programmes are necessary for security of supply and for improving energy sustainability, and that energy labelling is one of the most effective measures.

Presentations at the seminar gave a clear demonstration of the variety of labelling programmes within the APEC region. Those that focussed on the programmes of individual economies provided useful insights and examples.

- ✓ Les Winton, a consultant on the Australian energy labelling programme, pointed out that labels need to communicate with consumers who are mainly neither technically-minded nor interested in energy efficiency. Other factors take priority in the purchase decision process. It is therefore necessary to undertake surveys to check the effectiveness of label design. He also noted that for the sake of familiarity, it is desirable for all labels — comparative energy performance; endorsement; even water efficiency — to share common features so they may be interpreted the same way.
- ✓ Chile is planning a labelling initiative, with the initial products likely to be refrigeration appliances, air-conditioners, clothes washers, clothes dryers, dishwashers and water heaters. Studies indicate that the greatest savings will come from a combined MEPS and Labelling programme.
- ✓ China supplements its mandatory minimum energy performance standards with voluntary labelling of common products with substantial potential energy savings. Labelling will probably become mandatory sometime in the future.
- ✓ The top runner programme in Japan is different from other “standards and labelling” programmes in that it is based on achieving a sales-weighted average efficiency. As part of the programme, labels indicate whether the model does or does not meet the target efficiency, and by how much.
- ✓ Korea’s energy labelling programme dates from 1992 and covers 12 items. A recent new class of product is the “kimchi refrigerator” which is designed to ferment and store kimchi and thus has design and testing requirements different from a conventional refrigerator.
- ✓ Malaysia is still developing its energy labelling, and will be using information from the seminar in the design of its programme.
- ✓ Engr. Pedro Guzmán from CONAE presented the Mexican programme, which has 18 standards in force, with two new projects and seven revisions under way. Labels have been in place since 1993, although their design has changed from a European style in yellow and black to the United States style, with some products having energy

performance information on a nameplate type of label. Mexico is a member of the COPANT committee working on energy efficiency cooperation in Central and South America.

- ✓ Engr Arturo Zabala from the Lighting and Appliance Test Laboratory recounted the history of energy labelling in the Philippines, which started in 1993 with room air-conditioners. More recently, the Philippines has been one of the participants in the Efficient Lighting Initiative.
- ✓ In Singapore, energy labelling is presently an extension of their eco-labelling scheme. It works in collaboration with other programmes, including providing information to schools.
- ✓ There were three presentations from Chinese Taipei. Most standards are established as MEPS, but with a requirement to display certain energy performance data. Information is also provided via advertising, consumer magazines and Consumer Foundation reports, while an introduction to energy issues is given in schools. Products that meet a high efficiency level may display an endorsement label. Moves to improve the quality of lighting in schools are being given particular attention.
- ✓ Vietnam is developing a voluntary endorsement label, with an early emphasis on lighting products, as over half of the electricity use in Vietnam is for lighting.
- ✓ The former USSR energy efficiency standards lost their obligatory status in the change to individual economies. In Russia there is currently a proliferation of voluntary labels. The situation will become more structured, especially with the disappearance of surplus electricity supply capacity. Russia is keen to co-operate on labelling with other economies and regional groupings.

There were also presentations on broader and cooperation issues, which detailed factors that will, in future, need to be taken into account when developing or revising energy labelling programmes.

- ✓ Dr Peter du Pont spoke on the web-based “Energy Standards Information System” that he manages for APEC, and demonstrated its usefulness as a source of information and a tool for effecting the move towards harmonization.
- ✓ When introducing the discussion paper, an historical analogy was used to make the point that energy labels needed to be associated with genuine value, needed that value to be maintainable and enforced, and also should be widely recognised. The present situation is not ideal, but could be addressed by well-designed international cooperation. The following discussions showed general support for good information flow via such mechanisms as the Energy Standards Information System, increased emphasis on the production of generally applicable test protocols and performance requirements, and greater exchange of experiences and practical knowledge.
- ✓ In a report on the UNDP perspective, it was noted that energy performance labelling and minimum energy performance standards were regarded as cost effective DSM measures, and that such programmes at either national or regional level could well obtain UNDP and GEF support. It is recognised that it is necessary to overcome barriers to energy efficiency, such as lack of national policy. An example was given of what a regional project could feature.
- ✓ Those APEC member economies that belong to ASEAN are developing a common voluntary endorsement label. The system is being designed to be compatible with national comparative labels and international test protocols. While there are

discrepancies between the economies, these are solvable. Initial product groups being addressed are electromagnetic ballasts, refrigerators and air-conditioners.

- ✓ The South Asia Regional Initiative was given as another example of developing regional cooperation on energy labelling. Meetings of the six countries involved had concluded that it is possible to harmonize standards for energy performance testing. The proposed strategy is to align testing, promote mutual acceptance, develop a rationale for harmonization, and gain commitment via a high level intergovernmental committee.
- ✓ Dr Stephen Wiel from Collaboration on Labeling And Standards Projects (CLASP) presented a review of CLASP rationale, organization, activities, plans and goals. Their services cover all steps in “Standards and Labelling” development and they work on national, regional and international projects.
- ✓ Frank Pool, a consultant from New Zealand and also operating agent for an International Energy Agency task on energy standards, pointed the way towards eventual global alignment of energy efficiency requirements. He also demonstrated that technical development leads to an increasing need for cooperation.

Thus the types of programme range from voluntary to mandatory via mandatory with voluntary elements. Labels may be endorsement type, comparative, classification or information type, or combinations of these. Presentation of labels ranges from a single simple symbol placed on the item, or even in the relevant technical literature, to large, colourful stickers of tags displayed prominently on the unit. Programmes are at various stages of development, some having been revised several times and others being at the early concept stage. The product classes covered by labelling programmes also vary.

There is increasing realisation that there are benefits from co-operation on labelling programmes, and several such examples of co-operation within the APEC region and some involving economies outside of APEC were given.

Even those participants with the longest experience in the area said that they learnt much from the seminar. General points that emerged from the seminar included the following.

- ✓ It is important to test proposed label designs on consumers. The engineers and officials who commonly make up project teams tend to have a different outlook than the typical types of shopper and so cannot necessarily design a label that will appeal in practice.
- ✓ Once consumers have become accustomed to a design of energy label, there is a preference for all related labels to have similar features.
- ✓ Exchange of information among APEC member economies is increasingly important. The ESIS is a useful service that needs to be fostered and supported.

The seminar included periods of open discussion which enabled particular points to be clarified and for suggestions to be made regarding future co-operative activity in the area. Suggestions that may be considered by the 23rd meeting of the APEC Expert Group on Energy Efficiency and Conservation were made as follows.

- ✓ As energy labelling practitioners can always learn from each other, it would be useful to have similar events periodically, perhaps every 2 to 3 years.
- ✓ There is a need for technology transfer and capacity building between economies with developed programmes and those that are contemplating an energy labelling programme or are in the early stages of developing one. It was suggested that this

could take the form of a number of guides or “model specifications” on individual product classes. Each guide could contain:

- a study listing and comparing the existing programmes around the world and the technical documents that support the programmes;
- a recommendation from a specially convened working group on the selection of a testing protocol;
- a recommendation from the same working group on efficiency grading;
- information, or a template, pertinent to a cost/benefit analysis;
- information relating to promotional campaigns.

Product classes for initial guides could be ballasts for fluorescent lamps and air-conditioners, as material is available from previous EGEE&C and SGES projects. Motors (specifically three-phase cage induction motors) could also be studied as the situation is relatively uncomplicated. Compact fluorescent lamps would also be a potentially rewarding product class to work on, as there is increasing interest in such programmes but supporting technical standards have not yet started to proliferate, thus presenting an opportunity for early alignment of programmes.

It was pointed out that there could also be cooperation on developing energy efficiency initiatives for some of the product classes that are important to relatively few APEC member economies. Examples given included space heating appliances and systems and their controls, which would be relevant to those economies with colder climates such as Canada, Russia and parts of China and USA.

- ✓ It was noted that there seem to be few examples of labelling programme reviews that evaluate programme effectiveness and cost without repeating some of the assumptions used in pre-programme analysis. There is anecdotal evidence that the cost to manufactures of producing higher efficiency models is very significantly less than is claimed at the initial analysis stage.

This deficiency could perhaps be addressed by requesting economies to provide short (up to four pages) write-ups on their programmes, providing as far as possible the answers to a set series of questions. It may be prudent to trial this in the near future, so that if it turns out that there are significant costs involved, there is time to prepare a project proposal for 2005 funding. The list of topics to be covered and questions to be answered could be drawn up by a working group comprising experts from EGEE&C 23.

It is hoped that such a series of write-ups could support proposals for energy labelling programmes that are being questioned.

Seminar evaluation by the participants showed a high degree of approval and that it was considered very relevant and useful. Nearly all thought the seminar content just right, and over half intend to make changes to their economy’s labelling programme as a result of attending the seminar.

Dr Tsau Fanghei, Moderator

Ir David Cogan, Rapporteur

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