S&Q

Standards & Quality News

SIRIM

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SERIOUSLY GREEN

Standards and quality initiatives to ensure a clean and sustainable future for our children

THE SHIFT TO GREEN

It's time for a set of Green standards for the Malaysian ICT sector

GUARDIANS OF THE FOREST

SIRIM QAS International helps ensure Sustainable Forest Management

SCUBA DIVING HAVEN

Standards for the scuba diving industry will support marine tourism

CONTENTS

S&Q Vol.20, 01/2011 "Green Legacy"

EXACT FARE?
How do you know you get what you pay for when using metered payment systems? Find out on page 16.

FEATURES

Scuba Haven, see page 12.

Clearing the Air, see page 14.

OF INTEREST

SUSTAINABLE STANDARDS

Since the dawn of recorded history, humans have strove to build a better world for themselves and leave a legacy for the next generation. Green technology is merely the culmination of this effort. Green technology reduces the negative impact of human activities on the environment, so that this generation can enjoy a high quality of life without depriving future generations of the same. The application of green technologies and initiatives can be seen in various sectors such as energy, construction, transportation and water and waste water management.

The global development of Green Technology is far from standardised. On one hand, institutions around the world can agree on the importance of products, equipment and systems that conserve the natural environment and resources. On the other hand, there are many criteria for what "green" means, and they often contradict one another. There is a strong need for standards and quality institutions such as SIRIM to take a hand in the development of green standards.

Previous issues of S&Q News have focused on green innovations in sectors such as energy, automotive and environmental technology. However, this issue takes in a broader sweep of technologies that will leave a green legacy for future generations.

Our Green ICT article looks at the application of technologies and practices that materially reduce toxins, energy consumption, greenhouse gas emissions and waste in ICT product lifecycles. Similarly, the Kyoto Protocol is another initiative to reduce greenhouse gas emission in order to combat global warming. Countries can measure their efforts against climate change with certified emission reduction credits. At the same time, standards are now being developed to not only support the implementation of new technologies but also conserve the natural environment. We examine how standards are used to safeguard indoor air quality in line with the initiatives of the Department of Occupational Safety and Health (DOSH).

There are also other initiatives to conserve the natural environment. Sustainable forest management is one example where there is balance between harvesting and preserving the forest. Another initiative is through Roundtable Sustainable Palm Oil (RSPO) certification, which is applicable for the palm oil supply chain to ensure its sustainability and minimize harm to both the land and community.

We also cover several other standards, including the Malaysian Standard specification for glass-fibre reinforced polyester panels and panel water tanks, scuba diving standards, and also formal standards for calibrating measuring instruments.

Nor Hashimah

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PUBLICATION COORDINATOR

Pn. Lili Masni Ab.Jalil
Tel: +603-5544 6346
Fax: +603-5544 6348
Email: lili@sirim.my

Copies of this newsletter are available on request from:

SIRIM Berhad,
1, Persiaran Dato' Menteri
Section 2, P.O. Box 7035
40700 Shah Alam, Selangor
Tel: +603-5544 6000
Fax: +603-5510 8095
Web: http://www.sirim.my

Concept & Design:
Marcus Gomez & Partners Sdn Bhd
17, Lorong 4/48A
46050 Petaling Jaya, Selangor
www.marcusgomez.com

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SIRIM Berhad
1, Persiaran Dato' Menteri
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40700 Shah Alam, Selangor.

SHIFT TO GREEN

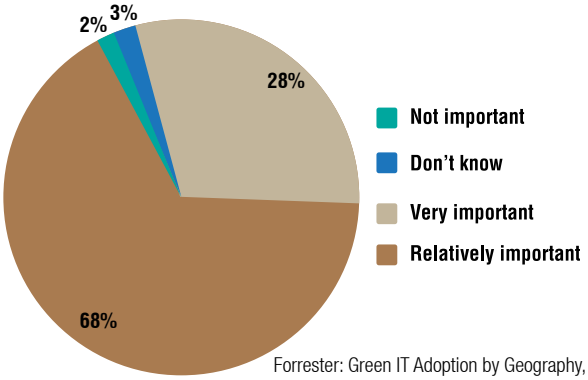
Malaysia's ICT sector is ready and eager to go green, and the Green ICT Working Group is leading the way by setting the standards for the change to come.

by Nur Faezal bin Elias,
Chairman, Green ICT Working Group.

Information and communications technology (ICT) has a shinier and more attractive public image than most industries. For most people, the first thing that comes to mind when they hear "ICT" is a sleek laptop computer. It's a far more palatable image than the rumbling tractors of agribusiness or the belching smokestacks of the steel industry. But the sad truth is that the ICT industry is as resource-hungry as they come.

Gartner Group has found that the ICT industry, not including broadcasting, contributes an estimated 2-3% of global greenhouse gas emissions. That figure is comparable to the emissions of the airline and shipping industries, and it's no joke. Not only does the industry consume vast amounts of energy, it also has to grapple with the issue of electronic components that can leak toxins when disposed of, otherwise known as e-waste. In fact, every stage of the ICT lifecycle has a major environmental impact, from manufacturing to deployment, use and final disposal.

HOW IMPORTANT IS ENVIRONMENTAL CRITERIA FOR COMPANIES WHEN CHOOSING IT VENDORS AND PRODUCTS?



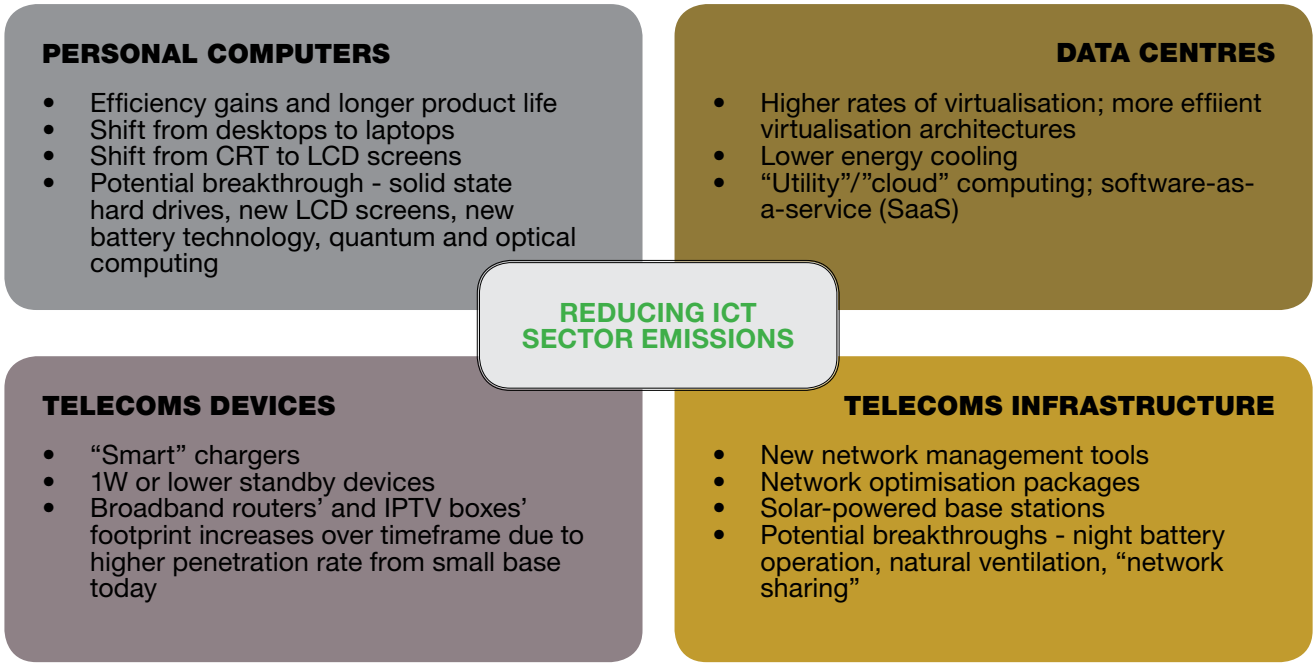
Forrester: Green IT Adoption by Geography, 2009

THE NEED FOR GREEN

Fortunately, the ICT industry is a knowledgeable one and has already become well aware of the need to conserve energy and reduce its impact on the environment. In another study conducted by the Forrester Group in 2009, 152 companies were asked to rate the importance of environmental criteria for companies when choosing IT vendors and products. 28% of respondents considered environmental criteria to be "very important" with another 68% considering it "relatively important." In short, the vast majority of companies surveyed have identified Green ICT as a priority.

Green ICT isn't just good for the planet, it's also good for business, as a 2009 study by T-Systems has found. The study indicated that an effective Green ICT strategy has both external and internal impacts on a company. Green ICT cuts costs, enhances image and also helps a company to comply with current and future legal requirements. In addition, the policy increases employee satisfaction as workers are more likely to be drawn to - and stay with – an environmentally conscious organisation.

The four most important areas for attention in implementing Green ICT are personal computers, data centres, telecommunication devices and telecommunication infrastructure. To reduce emissions in the ICT sector, more energy-efficient and cost-efficient upgrades need to be made in all four areas.



MALAYSIAN ROADMAP

In June 2010, the Malaysian Technical Standards Forum Berhad (MTSFB), a body under the purview of the Malaysian Communications and Multimedia Commission (MCMC) set up a working group to lead the way in Green ICT initiatives. The Green ICT Working Group (GICT WG) was founded with three objectives:

1) To recommend to the MCMC a minimum set of guidelines on the Green ICT concept to be adopted by Government, private sector and consumers.
2) To engage in active discussion with related Government agencies on ways to achieve the Kementerian Tenaga, Teknologi Hijau dan Air (KeTTHA) National Green Technology Policy.
3) To collaborate and share information with other Green ICT initiatives in Malaysia and the rest of the world. This ensures a uniform direction in achieving the Government's objective.

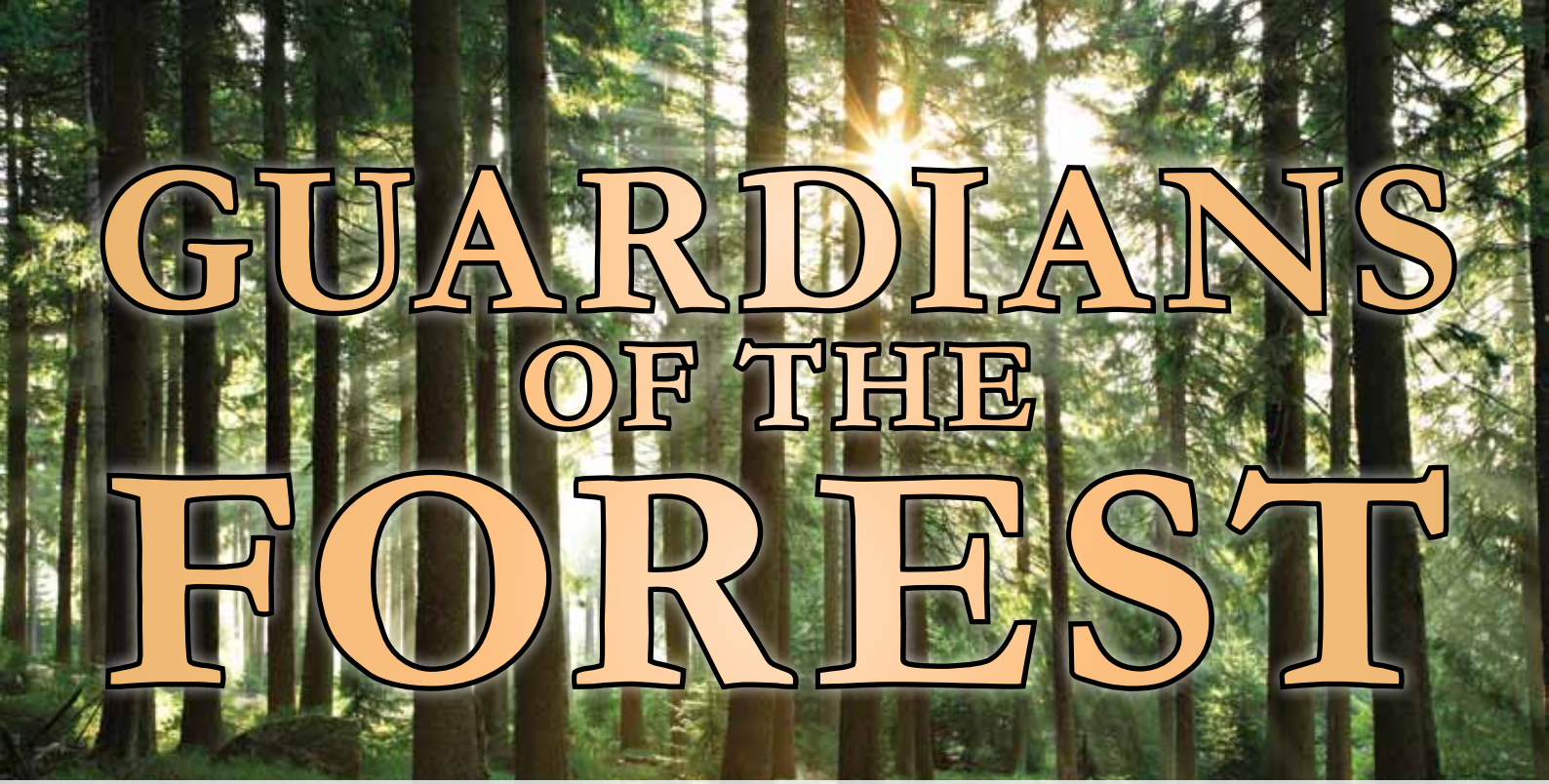
Table 1: Benefits of Green ICT

Environment/ Society	• Lower CO_2 emissions • Reduced resource consumption • Compliance with legal requirements (in the future)
Companies	• Reduced energy costs • Reduced operating costs of data centres • Less hardware needed
Employees	• Increased employee satisfaction • Greater loyalty • Easier recruitment
Capital Market	• Improved ratings • Higher share prices • Greater company value
Customers	• Greater customer loyalty • Appeal to new customer groups • Greater customer satisfaction
Public	• Improved brand/company image • Rounded-out CSR strategy • Greater brand value

The GICT WG (www.greenict.org.my) currently numbers more than 50 members, and has been working tirelessly to promote the Green ICT concept to all parties involved in the ICT sector, including private companies and the public. The GICT WG has set up three working threads to further pursue its goals:

1) Promotions and Awareness
2) Green Solutions for the ICT Industry
3) Green ICT Metrics and Measurements

The GICT WG has devised some game-changing projects in store for the future. One of these is a Proof of Concept Project that will look into alternative power sources for the Base Transceiver Stations (BTS) that form the backbone of wireless networks in Malaysia. Mobile phones, Wi-Fi and WiMAX devices all rely on these stations to keep them connected to their respective networks, which is why they are constantly switched on – and constantly guzzling power. With the assistance and collaboration of key industry players, GICT WG plans to test and gather information on alternative energy technologies such as solar, wind turbine and fuel cells. If this Proof of Concept Project succeeds, the entire nation could enjoy cleaner and "greener" wireless networking. S&Q



GUARDIANS OF THE FOREST

Forests are vital natural resources to be carefully managed. Sustainable Forest Management (SFM) finds the balance between harvesting from forests and preserving them. In Malaysia, SIRIM QAS International plays an important role in forest management certification.

Malaysia's tropical rainforests are truly natural wonders. These ancient forests are some of the oldest in the world, and they are home to unique species of plant and animal life found nowhere else. Unlike forests in temperate climates, tropical and equatorial forests have far greater concentrations of biomass and far greater biodiversity. But these natural wonders are under severe threat.

The threat to forests comes from reasons of economics. Forest products contribute about one percent of the world's gross domestic product (GDP), and the annual turnover of timber and other wood products from forests is worth more than RM600 billion. Consequently, many forests are being endangered by timber harvesting as well as land-clearing.

Land development and reckless timber harvesting have resulted in deforestation – the permanent loss of forest and the conversion of land to non-forest use. With deforestation comes loss of biodiversity, uncontrolled erosion and flooding. Worse, it reduces the environment's ability to absorb carbon dioxide and slow global warming.

FRAGILE TREASURES

The sheer economic and biological wealth of forests makes them crucial to innumerable forms of life: plants, animals and humans alike. Unfortunately, it also makes them easy targets of reckless harvesting for short-term gain.

The forest ecosystem brings myriad species of plants into a close web of relationships with animals and microorganisms. Countless animal species can only survive in forests. The roots of trees prevent soil erosion and help to maintain the freshwater cycle. More importantly, forests create oxygen and absorb atmospheric carbon dioxide that would otherwise contribute to global climate change.

The tropical rainforests are also home to over 10 million members of tribal groups who rely on forest products for their daily lives. The destruction of forests will bring with it the destruction of many unique and endangered cultures.

FORESTS IN THE BALANCE

In order to safeguard our forest resources, it is necessary to set a balance between development and conservation. Sustainable forest management (SFM) sets social, economic and environmental goals to be achieved in managing forest resources, and many countries around the world have developed SFM initiatives.

SFM is commonly defined in seven thematic areas: Extent of forest resources, biological diversity, forest health and vitality, productive

functions of forest resources, protective functions of forest resources, socio-economic functions and legal, policy and institutional framework. These areas are described in the United Nations' Non-Legally Binding Instrument on All Types of Forests as a reference framework for SFM.

Because of the growing awareness of environmental issues and increased consumer demand for socially responsible products, third party forest certification has become an important means of communicating the environmental and social performance of forest operation. SFM certification allows suppliers to verify that they are purchasing forest products that have been procured from sustainably managed forests. This certification can then become an important marketing tool for assuring consumers that products have been sourced responsibly.

ENSURING RESPONSIBLE FOREST USE

There are more than 50 certification standards worldwide, including the Forest Stewardship Council (FSC), the Sustainable Forestry Initiative (SFI) and the Programme for the Endorsement of Forest Certification (PEFC). In Malaysia, SIRIM QAS International provides vital certification services for wood products under more than one internationally recognised standard.

One important concept in sustainable forestry is Chain of Custody. Chain of Custody refers to the auditing of every step of the transportation and processing of wood-based products, from primary logging through timber processing to final product. It is used to prove the origin of wood products so that buyers can be assured that the products come from responsibly managed forests.

SIRIM QAS International is a Malaysian Timber Certification Scheme (MTCS) notified body which has been accredited by the Department of Standards Malaysia to PEFC Annex 4 for Chain of Custody and forest management certification. What this means is that the company can issue accredited certificates for forest management as well as certifying Chain of Custody for applicants who wish to use the PEFC logo on their products. In addition, SIRIM QAS International has collaborated with Scientific Certification Services of California, USA in order to provide Chain of Custody certification under the requirements of the FSC's standards.

Because of its SFM certification services, SIRIM QAS plays a crucial role in ensuring that forest operations are well managed and meet the standards of sustainability. With the company's help, Malaysia's forest industries can meet the often stringent environmental standards set in markets around the world. At the same time, the growth of SFM certification discourages unsustainable logging and helps to protect our tropical forests for the next generation. SQ

PROCESS FLOW ON FOREST MANAGEMENT CERTIFICATION

Submission of questionnaires	Information about the project seeking certification.
Contract review and issuance of quotation	Costing will be prepared for the entire Forest Management Certification process.
Application	Upon agreeing to the quotation, the client is required to submit the application form together with application fee.
Stage 1 audit	The Stage 1 audit is carried out to determine the adequacy of the client's FMC documentation, evaluate the site conditions and determine the stakeholders of the site's activities.
Stakeholder consultation	It shall be carried out via the SIRIM QAS International website. The consultation process shall be undertaken not less than 30 days before the Stage 2 audit.
Stage 2 audit	The Stage 2 audit is carried out to evaluate the implementation and compliance to Malaysian Criteria and Indicators (2002).
Draft report	A draft report including the audit findings will be prepared. Client to respond and close the audit findings raised.
Peer review	Competent persons shall be appointed to undertake a peer review of the report.
Final report	A final report shall be issued after taking into consideration the comments made during the peer review process.
Approval	The certification panel reviews and approves the recommendation for certification.
Issuance of certificate	Certificate issued on signing of Certification Agreement. Surveillance audit conducted (at least once a year).

PROGRESSIVE PLANTATIONS

Oil palm plantations are in the crosshairs. The industry has been targeted by environmental NGOs questioning the sustainability of its practices. Fortunately, SIRIM QAS International can help to set things straight by certifying the industry's sustainability.

Much has been said about the effects of the palm oil industry on the environment. Among the charges leveled at the industry: Destroying forests, contributing to haze through open burning, threatening wildlife and displacing native communities from their land. How can the palm oil industry clear its name against these accusations?

The fact is that the palm oil industry in Malaysia has undertaken many initiatives to increase its sustainability and avoid harm to both the land and the community. The industry has adopted a policy of zero burning since the 1990s. In addition, local communities have received development assistance from the oil palm industry, and wildlife rehabilitation centres have been established to help preserve the biodiversity of natural habitats.

In response to the global demand for sustainably produced palm oil, the internationally recognised Roundtable on Sustainable Palm Oil (RSPO) certification was introduced in 2004. The RSPO demonstrates the commitment of the palm oil industry to the three pillars of sustainability – environmental, social and economic. The RSPO's mission is to promote the production and use of sustainable oil palm products through credible global standards and engagement of stakeholders.

In order to ensure the production of sustainable palm oil, the RSPO developed documents that describe the required steps to be taken by growers, millers and other players in the supply chain. The most important document is the RSPO Principles and Criteria (RSPO P&C), consisting of eight principles and 39 criteria.

The eight principles are commitment to transparency, compliance with applicable laws and regulations, commitment to long-term economic and financial viability, use of appropriate best practices by growers and millers, environmental responsibility and conservation of natural resources and biodiversity, responsible consideration of employees and of individuals and communities affected by growers and mills, responsible development of new plantings and commitment to continuous improvement in key areas of activity.

The RSPO performs certification for palm oil mills and their supply base, meaning the estates around the mill which supply fresh fruit bunches for processing. Together, a palm oil mill and its estates are referred to as a certification unit. A

RSPO

SIRIM

certification unit that meets the eight principles of the RSPO P&C can apply for RSPO certification from a RSPO approved certification body such as SIRIM QAS International. Palm oil from an RSPO certified unit is referred to as certified sustainable palm oil (CSPO).

The next level of the supply chain uses RSPO Supply Chain Certification Systems to track the procurement and consumption of CSPO. This is done using any of the four RSPO Supply Chain Models: identity preserved, segregation, mass balance and book and claim.

HALFWAY TO SUSTAINABILITY

Consumers who are aware of the distinct environmental benefits of supporting CSPO are driving the demand for sustainably produced palm oil and palm oil-based products. This trend is encouraging more and more plantation owners to take the necessary steps to demonstrate their green credentials, including certification based on RSPO P&C. For businesses dealing in downstream palm oil products, certification based on RSPO Supply Chain requirements will help them to meet the demand for sustainable palm oil.

"Many companies don't realise that they already follow many of the best practices required for RSPO certification."

However, many companies are adopting a "wait and see" attitude with regards to sustainability certification. Some of them are deterred by the apparent cost of implementing sustainable practices and the lack of a premium for CSPO.

What these companies don't realise is that they already follow many of the best practices required for RSPO certification. For instance, many plantations are already performing integrated pest management (IPM) by using native weeds, barn owls and other biological methods to control pests in palm oil estates. A significant number of palm oil producers also ensure zero discharge through the conversion of palm oil mill effluent and biomass into compost. With best practices like these in place, certification is a lot easier than one might expect.

The RSPO P&C standard is currently under review to strengthen the criteria on sustainability with the consideration of other issues such as high conservation value areas and greenhouse gas emissions, both of which are cited by environmental NGOs for being negatively affected by palm oil production. A revision of the criteria could potentially address these sustainability issues. In addition, the P&C could be amended to effectively address high-profile social issues such as native customary rights, treatment of workers, forced labour, child labour and provision of sufficient worker amenities such as housing facilities. S&Q

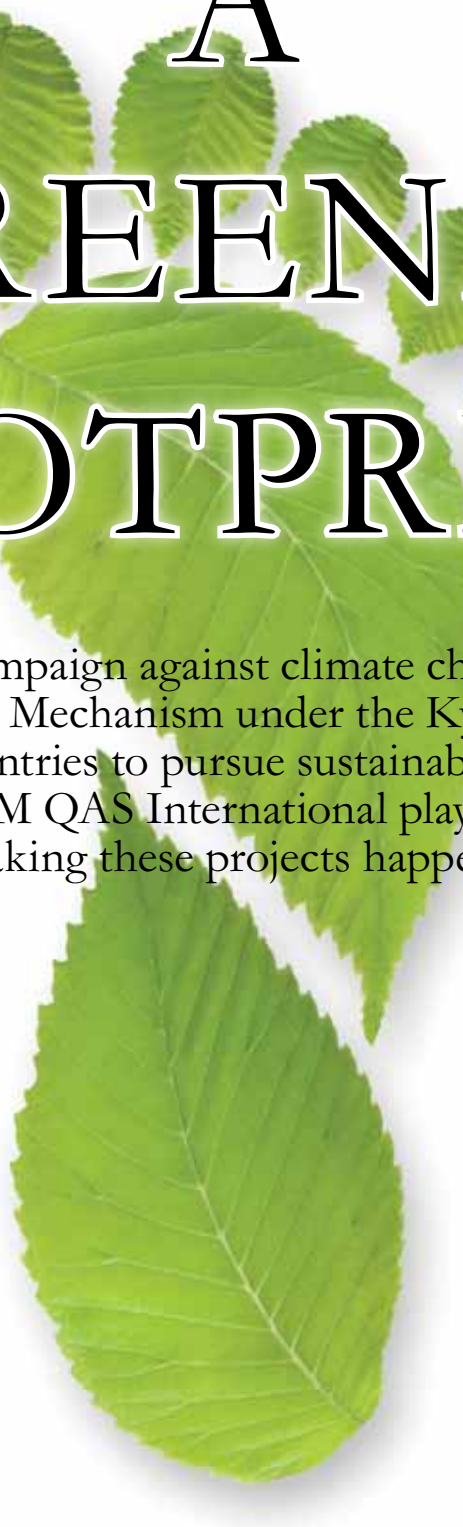
PROMOTING A GREENER INDUSTRY

The RSPO is a non-profit association that works towards the development and implementation of global standards for sustainable palm oil. To do this, it works with stakeholders from seven sectors of the palm oil industry:

- **Oil palm producers**
- **Palm oil processors or traders**
- **Consumer goods manufacturers**
- **Retailers**
- **Bank and investors**
- **Environmental or nature conservation NGOs**
- **Social or developmental NGOs**

Current membership of the RSPO stands at 460 and includes stakeholders from all the sectors mentioned above. These stakeholders all share a common goal: to promote the production, procurement and consumption of sustainable palm oil.

A GREENER FOOTPRINT



In the global campaign against climate change, the Clean Development Mechanism under the Kyoto Protocol encourages countries to pursue sustainable development projects. SIRIM QAS International plays a key role in making these projects happen.

How do you measure climate change? Is it measured in units that you can buy and sell like commodities at a market? As it turns out, that's not far from the truth. Under the Kyoto Protocol, countries can measure their efforts against climate change in certified emission reduction (CER) credits equivalent to tonnes of carbon dioxide (CO_2). What's more, these credits can be traded as part of the international effort to combat global warming.

The Kyoto Protocol was adopted at the United Nations Climate Change conference on 11 December, 1997 in Kyoto, Japan. The protocol is an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC). Signed and ratified by 191 countries to date, the protocol has set commitments for industrialised countries to reduce their greenhouse gas (GHG) emissions. The ultimate goal of emissions reduction is to reduce the rate of global warming by an average of five per cent against 1990 emissions over the five-year period from 2008 to 2012. The protocol addresses the most important GHGs: carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydroflourocarbons and sulphur hexafluoride.

"Because Malaysia has signed and ratified the Kyoto Protocol, it is able to participate in CDM projects."

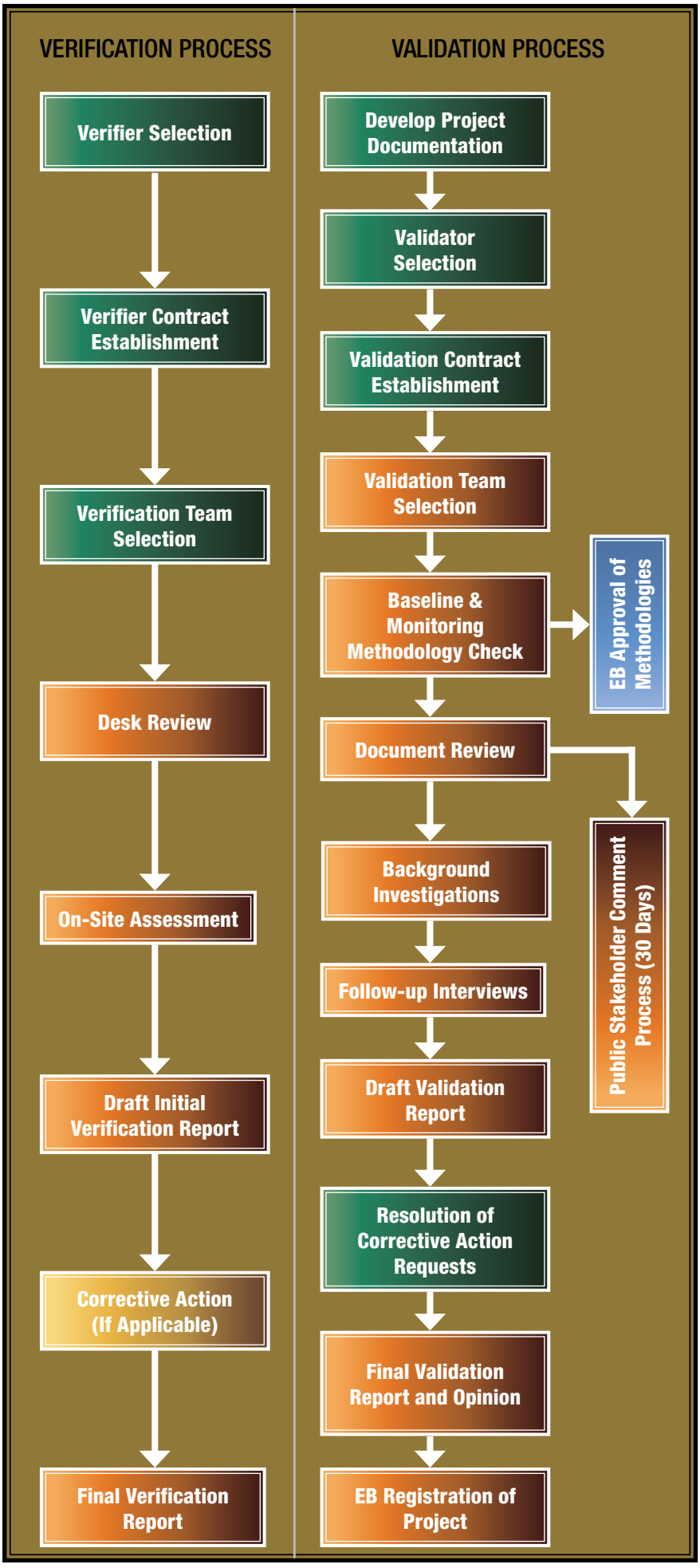
The protocol introduced three mechanisms to reduce GHG emissions, measured in tonnes of carbon dioxide. These mechanisms are Emissions Trading, the Clean Development Mechanism (CDM) and Joint Implementation. The Clean Development Mechanism is of particular importance to countries like Malaysia, because it allows industrialised countries to partner with developing countries to reduce GHG emissions through sustainable development.

Under the definition of the CDM, industrialised countries are able to meet part of their reduction commitments by earning certified emission credits from projects that reduce GHG emissions in developing countries. This also encourages industrialised countries to assist developing countries in building up their infrastructure in a sustainable way.

Because Malaysia has signed and ratified the Kyoto Protocol, it is able to participate in CDM projects. Creating a CDM project isn't easy – the project must go through a thorough process of approval, validation and verification. Currently, the only Malaysian company accredited to perform CDM validation and verification is SIRIM QAS International.

MEETING HIGH STANDARDS

Projects intending to be registered as CDM projects need to be approved by a country's Designated National Authority (DNA). In the case of Malaysia, the Ministry of Natural Resources and Environment has been appointed to serve in this role. A CDM project must also have some



additional reduction benefit above and beyond what would normally be achieved, reductions that would not occur without the additional incentive provided by emission reductions credits. This concept is called "additionality." Apart from additionality, a CDM project should also fulfill the country's national CDM criteria along with conditions set by the CDM executive board, the body that supervises CDM activities for the Kyoto Protocol.

The protocol also requires an independent third party – a Designated Operational Entity (DOE) – to be involved in the CDM project cycle. In the case of Malaysia, this is where SIRIM QAS International comes in.

CREDITS WHERE CREDITS ARE DUE

SIRIM QAS International achieved accreditation by the CDM executive board as a DOE on 25 March, 2009 for validation and verification functions covering the scope of energy industries (renewable/non-renewable), energy distribution, energy demand, manufacturing industries and waste handling and disposal. The company serves to ensure the environmental integrity of the CDM and to facilitate the trade in emission reductions by verifying that these reductions are in fact being achieved.

A typical CDM project must pass the validation and verification processes in order to earn CER credits. SIRIM QAS International performs important functions in both stages. As a DOE, SIRIM QAS International performs validation for all CDM projects in order to assure stakeholders of the quality of the projects and their intended generation of CER credits. The project design document must be assessed to ensure that it is complete and meets the eligibility criteria set by the DNA and the UNFCCC. Once a project has been validated, it can be registered and formally accepted by the CDM executive board. S&Q

STANDARDS FOR GLASS FIBRE PANELS AND WATER TANKS

The Malaysian Standard for fiberglass panels and water tanks has been revised.

The lightweight material known as glass-fibre reinforced polyester, also known as fiberglass reinforced polyester (FRP), is used for many types of construction. Because of its strength, the same material used for making everything from transmission towers to yachts is also used to store potable water in storage tanks. The use of FRP for water storage is critical for meeting the daily water needs of millions of Malaysians, so it's no wonder that it is covered under a Malaysian Standard.

In 1995, a Malaysian Standard (MS 1390) was devised for the specification of requirements for glass-fibre reinforced polyester panels used in the construction of panel water tanks for the sanitary storage of potable water. In 1996, a performance assessment of FRP panels used in storage tanks found that revisions were necessary to the existing MS 1390. Guidelines for tank installation were also recommended as an informative annex in the revised MS 1390 to ensure that no defects are introduced during installation.

The national technical committee on Plastic Tanks as established by the Industry Standards Committee on Plastics and Plastics Products (ISC J) performed the revision of the standard. The revision was proposed by the National Water Services Commission (SPAN), which is the regulatory agency responsible for this task. The Malaysian Standard is also used by SIRIM QAS International in its Product Certification Scheme.

Deliberation on the standard was extensive, due to the implications and impact that the revision would have on the relevant stakeholders such as manufacturers and regulators.

MS 1390 – GLASS-FIBRE REINFORCED POLYESTER (GRP) PANELS AND PANEL WATER TANKS – SPECIFICATIONS

The following major modifications have been incorporated into the revision of this Malaysian Standard:

a) Changes to the requirements of the accelerated weathering, where Ultraviolet B (UVB) weathering for 3,000 hours (equivalent to nine years) has been set as the parameter for the accelerated weathering test. This is in addition to the inclusion of Cycle 3 of the ASTM G154, where two minutes of water spray is introduced during the eight-hour UV treatment;
b) A change to the requirements of roof fastening, wherein an additional statement specifies that the cover needs to be securely fastened to the roof and floor to avoid uplifting of the roof;
c) Changes to sealant performance requirements, where these changes encompass material composition, UV resistance, thickness and compressiveness;
d) Replacement of all unplasticised polyvinyl chloride (uPVC) with acrylonitrile butadiene styrene (ABS) and stainless steel;
e) Change to the requirements for continuous external vertical bracing; and
f) Incorporation of installation guidelines of glass-fibre reinforced polyester (GRP) tanks where the requirement for the roof has been included to cater for the human load during the installation process.

The revised MS 1390 has been made available to the public from 7th January 2010. It will help the relevant interested parties to achieve the objective of ensuring greater quality and safety of water storage tanks. S&Q

For more information, please contact ***Nageswary S Iyampillai****, Secretary TC Plastics Tanks, Scientific Standards Management and Consulting Services Section, SIRIM Berhad*

SCUBA HAVEN

With some of the most beautiful and diverse underwater environments in the world, Malaysia is set to become a major marine tourism destination. Malaysian Standards for scuba diving will help ensure quality and safety for the industry.

The tourism sector is a vital economic driver for many countries, and Malaysia benefits even more from tourism than most. Our tourism sector is currently valued at RM600 million, and the Government has targeted the sector to grow to RM1.8 billion by 2020 through the Economic Transformation Programme. The efforts of the Ministry of Tourism Malaysia ensured that the country achieved the ninth position on the list of the 10 most visited countries in 2009, an improvement from 11th position in the previous year that placed the nation just below Turkey and Germany.

The United Nations World Tourism Organisation (UNWTO) has recognised dive tourism as one of the fastest growing sectors of the tourism trade. Scuba diving attracts considerable revenue due to the many service industries associated with diving activities. Malaysia is fortunate to be blessed with some of the world's top dive sites, featuring diverse underwater geography such as sloping reefs, coral blocks, wall dives, deep dives, drift dives and wreck dives. In addition, the country possesses one of the richest marine environments in the Indo-Pacific Basin. In view of these factors, the Ministry of Tourism has identified dive tourism as one of the high-yield components of marine tourism and is aggressively promoting sites such as Sipadan as world-class scuba diving destinations.

BETTER DIVING STANDARDS

Despite Malaysia's natural advantages, there are relatively few regulations governing the dive tourism industry in Malaysia. On 26-27th April 2010, an expert group workshop met in Kuala Lumpur to discuss the impacts of dive tourism on the local community. The two major challenges highlighted at the workshop were a lack of specific legislation to guide the industry towards sustainable growth and a lack of capable human resources such as trained dive masters to manage the sector.

Recreational activities such as diving involve activities that require special training and experience in order to minimise risk. Divers need to be able to carry out dive activities with the highest degree of safety to participants while at the same time avoiding damage to fragile marine ecosystems such as coral reefs. Standardisation helps to ensure that all dive training and dive services will meet a minimum level of quality, and will help to promote the use of safe diving practices.

The creation of Malaysian Standards plays a crucial role in promoting a safer and more sustainable dive tourism sector. These standards ensure that all scuba divers have at least the minimum certification level and that dive service providers meet performance requirements in providing scuba training and education, scuba instructor qualification, guided dives and rental of diving equipment.

The other challenge for Malaysia is to enact useful legislation to regulate diving. The relevant authorities should consider adopting Malaysian Standards on diving as benchmarks for future regulations on scuba diving. By basing legislation on existing workable standards that have gained global recognition, the authorities can ensure that these new regulations will be both relevant and meaningful.

DEEP BENEFITS

Diving standards are important to all participants in the industry for the following reasons:

a) Consumers are better equipped to make comparisons regarding diver training, allowing consumers to choose training organisations and measure them against an independent benchmark;
b) Tour operators are able to demonstrate compliance with recognised standards. Standards can be used to help operators decide which training agencies or businesses to partner with;
c) Training organisations can gain a marketing advantage through compliance with standards. Potential divers will be attracted to organisations who can assure

them that the services they receive follow industry best practices.

To achieve these benefits, Malaysian Standards on diving must be accepted and well received by all relevant and affected stakeholders. The deliberation of the standard should involve the active participation of all stakeholders. For that reason, SIRIM Berhad took the initiative to establish a Working Group on Recreational Scuba Diving. Since 2005, the working group has included representatives from governmental agencies, dive operators, dive associations, academicians, as well as non-governmental organisations. The group brings together the various groups of relevant stakeholders with the aim of improving and elevating the skills of divers in Malaysia.

The Ministry of Tourism understands the importance of standards and quality, and has been certified to MS ISO 9001:2008 by SIRIM QAS International Sdn. Bhd. Therefore, it makes sense for the Malaysian Standards on scuba diving to be technically identical to the ISO standards. The advantage in aligning with ISO standards is that these standards equate to a professional level that is well received by the domestic and international diving industry.

The series of standards relating to recreational diving services include:

a) MS ISO 24801-1, Recreational diving services — Safety related minimum requirements for the training of recreational scuba divers — Part 1: Level 1 — Supervised diver
b) MS ISO 24801-2, Recreational diving services — Safety related minimum requirements for the training of recreational scuba divers — Part 2: Level 2 — Autonomous diver
c) MS ISO 24801-3, Recreational diving services — Safety related minimum requirements for the training of recreational scuba divers — Part 3: Level 3 — Dive leader
d) MS ISO 24802-1, Recreational diving services — Safety related minimum requirements for the training of scuba instructors — Part 1: Level 1
e) MS ISO 24802-2, Recreational diving services — Safety related minimum requirements for the training of scuba instructors — Part 2: Level 2
f) MS ISO 24803, Recreational diving services — Requirements for recreational scuba diving service providers

A further two diving-related standards are in the pipeline, both based on International Standards. They cover the level of competency required of a scuba diver to be awarded an enriched air nitrox (EAN) diver certification by a training organisation and a standard for minimum requirements for training organisations offering introductory scuba experience training programmes to non-divers.

The availability of Malaysian Standards on diving will provide a means of measuring improvement in the control regimes of the diving industries, aimed at maintaining safety. This will ultimately help to open up all areas of the local diving industry to greater international recognition and greater opportunities. Malaysia's reputation as a beautiful and safe diving haven can only get better. S&Q

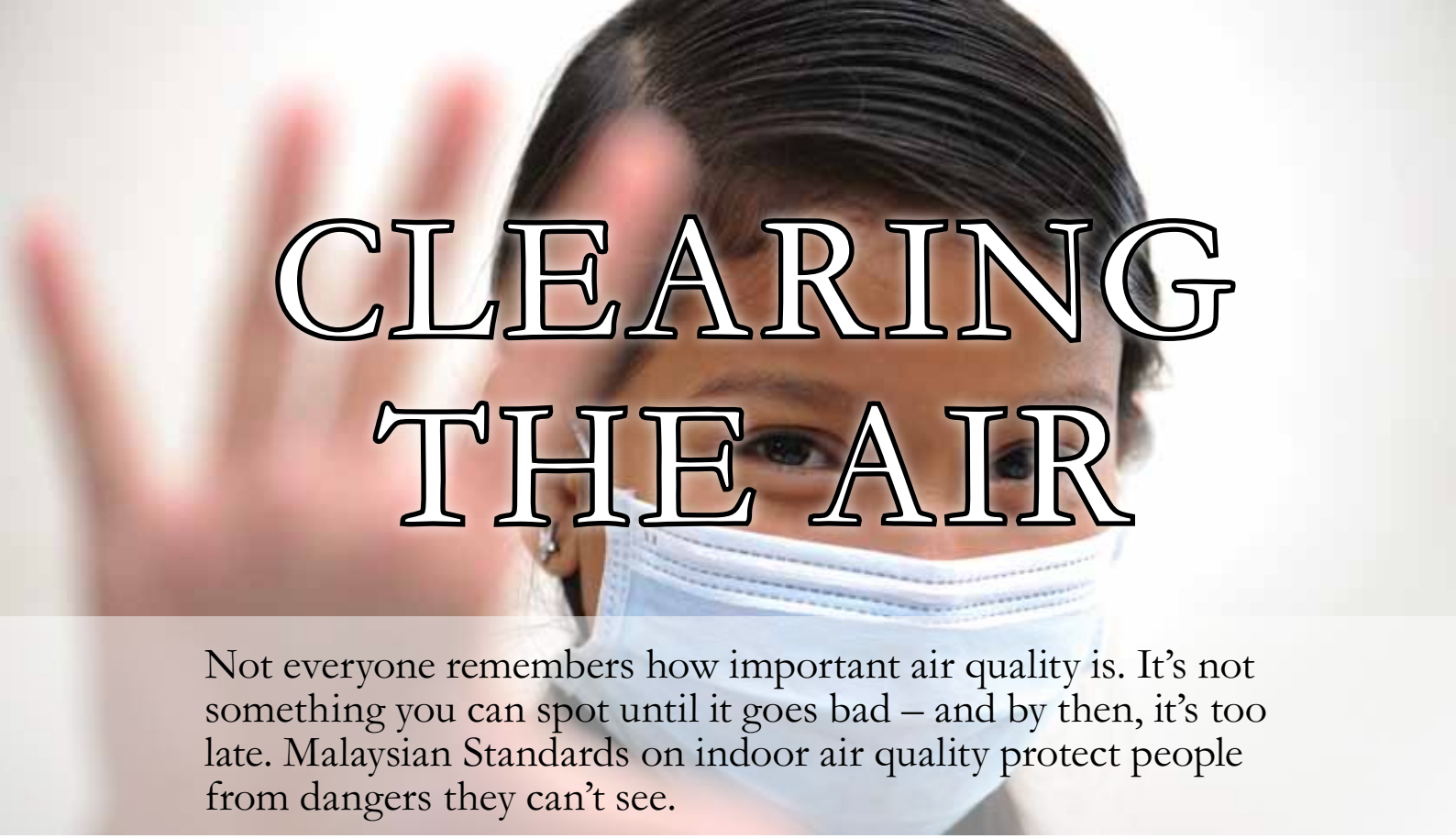
SWIMMING WITH THE FISHES

The term "scuba" was originally an acronym for Self-Contained Underwater Breathing Apparatus, developed by Emile Gagnan and Jacques-Yves Cousteau. The technology involves a source of compressed air, usually a cylindrical tank, which can be carried by the diver.

Before the invention of scuba diving, underwater divers had to rely on an air supply that was pumped from the surface down to the diving suit through an unwieldy tube. This was both limiting in movement and potentially dangerous since the tube could get stuck or damaged.

Thanks to the greater range and freedom of underwater movement granted by scuba technology, both recreational and professional diving activities have exploded in popularity. This has fueled a growing demand for certified scuba diving instructors. Although there is no central certifying or regulatory agency for recreational scuba diving, many diving organisations exist to perform certification, including the American Canadian Underwater Certifications (ACUC), the British Sub Aqua Club (BSAC) and the European Committee of Professional Diving Instructors (CEDIP).

Before scuba: An illustration of an antique diving suit.



CLEARING THE AIR

Not everyone remembers how important air quality is. It's not something you can spot until it goes bad – and by then, it's too late. Malaysian Standards on indoor air quality protect people from dangers they can't see.

Despite how the old saying goes, what you don't know can harm you. This is especially true of the air that you breathe inside a room. Indoor air quality can impact the health and comfort of occupants in just about any building or structure. Any part of a home can be affected by poor air quality: living rooms, bedrooms, recreation rooms, hallways, kitchens or bathrooms.

In addition, indoor air quality is important for ensuring safe and healthy workplaces, public buildings and vehicle cabins. While offices and retail spaces are not subjected to health and safety inspections with regard to air pollutants, air quality should be a concern for all these buildings and structures.

Indoor air quality can be impacted by any number of everyday environmental factors. Human sources of air pollution can include cooking, sanitation products and smoking. Domestic animals and house plants can create waste that contaminates the air. In addition, indoor air quality can change due to emissions from particle board and paints, room furnishings, ventilation systems, air-conditioning, climate conditions and outdoor pollution.

When should we perform measurement of indoor air quality? Measurement may be necessary when:

- There are complaints by users about poor air quality;
- There is a need to determine the exposure of occupants to certain substances;
- There is a need to measure whether specified limit values are being maintained;
- Testing the effectiveness of remedial treatment; or
- There are observed or suspected effects on the occupants' health.

The measurement and sampling strategy should be carefully planned, because the result of the measurement could have far-reaching consequences. Successful remediation of unfit air conditions can be costly and is not a project to be taken lightly. Several parameters also need to be considered in order to have an effective sampling and measurement of indoor air quality. The parameters include sampling equipment, time of sampling, sampling duration, sampling frequency, sampling location and parallel outdoor air measurement.

In Malaysia, the Department of Occupational Safety and Health (DOSH) has produced a "Code of Practice on Indoor Air Quality." This code of practice outlines the minimum standards that will protect the health of employees and other occupants of an indoor or enclosed environment served by a common mechanical ventilation and/or air conditioning system.

Apart from this code of practice, several Malaysian Standards have been developed to describe the sampling and measurement of various indoor air pollutants. These Malaysian Standards may complement the use of the code of practice issued by DOSH.

What we breathe in our homes and workplaces may be invisible to the naked eye, but the benefits of improving indoor air are easy to see. Healthier homes create healthier Malaysians in every walk of life. Businesses and organisations that make use of these standards in evaluating indoor air quality will be able to provide a cleaner and more secure environment for employees, partners and customers alike. S&Q

MALAYSIA STANDARDS FOR INDOOR AIR QUALITY

MS ISO 16000-1:2008

Indoor air - Part 1: General aspects of sampling strategy.

MS ISO 16000-2:2008

Indoor air - Part 2: Sampling strategy for formaldehyde.

MS ISO 16000-3:2008

Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds - Active sampling method.

MS ISO 16000-4:2008

Indoor air - Part 4: Determination of formaldehyde – Diffusive sampling method.

MS ISO 16000-5:2008

Indoor air - Part 5: Sampling strategy for volatile organic compounds (VOCs).

MS ISO 16000-6:2008

Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on TENAX TA® sorbent, thermal desorption and gas-chromatography using MS/FID.

MS ISO 16000-7:2009

Indoor air - Part 7: Sampling strategy for determination of airborne asbestos fibre concentration.

MS ISO 16000-8:2008

Indoor air - Part 8: Determination of local mean ages of air in buildings for characterising ventilation conditions.

MS ISO 16000-9:2008

Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method.

MS ISO 16000-10:2008

Indoor air - Part 10: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test cell method.

MS ISO 16000-11:2008

Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens.

MS ISO 16000-12:2009

Indoor air - Part 12: Sampling strategy for polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polycyclic aromatic hydrocarbons (PAHs).

MS ISO 16000-13:2010

Indoor air - Part 13: Determination of total (gas and particle-phase) polychlorinated dioxin-like biphenyls (PCBs) and polychlorinated dibenzo-p-dioxins/ dibenzofurans (PCDDs/PCDFs) - Collection on sorbent-backed filters.

MS ISO 16000-14:2010

Indoor air - Part 14: Determination of total (gas and particle-phase) polychlorinated dioxin-like biphenyls (PCBs) and polychlorinated dibenzo-p-dioxins/ dibenzofurans (PCDDs/PCDFs) - Extraction, clean-up and analysis by high-resolution gas chromatography/ mass spectrometry.

MS ISO 16000-15

Indoor air - Part 15: Sampling strategy for nitrogen dioxide (NO_2).

MS ISO 16000-16

Indoor air - Part 16: Detection and enumeration of moulds - Sampling by filtration.

MS ISO 16000-17

Indoor air - Part 17: Detection and enumeration of moulds - Culture-based method.

The above standards are available from SIRIM. For more information, please contact:

Maziah Mukhtar
Head, Standards Promotion and Sales Section
Tel: +6-03- 5544 6359 Email: maziah@sirim.my

DO YOU KNOW...?

ALL ABOUT CALIBRATION

The word calibrate can be traced back to the French word *caliber*, which referred to the procedure of sorting out objects such as cannon balls according to their size. During the Anglo-French wars, it was very important to sort cannon balls according to their sizes to ensure that cannons could fire effectively during battles. Those who did not sort out their cannon balls properly risked losing the battle. In other words, ensuring proper calibers was a matter of life and death.

In modern times, accurate measurement is just as important in many ways. The word calibration has a broader meaning, though, because it also refers to the technical prerequisite for quality manufacturing of products and accurate delivery of modern armaments.

The ISO 9001 standard gives attention to the control of measurement processes from the stage of receipt of raw materials to delivery of final products using 'fit-for-purpose' calibrated measuring instruments. In addition, the ISO 17025 Standard lays the foundation and requirements for a competent calibration laboratory that includes management and technical requirements.

FORMAL DEFINITIONS

Three terms are important for understanding the issues surrounding calibration today: Calibration, traceability and measurement uncertainty. The international vocabulary of metrology (VIM) defines them as follows:

- **Calibration** is the operation that, under specified conditions, in a first step establishes a relation between the quantity values with measurement uncertainties provided by measurement standards and corresponding indications with associated measurement uncertainties and, in a second step, uses this information to establish a relation for obtaining a measurement result from an indication.
- **Traceability** is the property of a measurement result whereby the result can be related to a stated reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty.
- **Measurement Uncertainty** is a non-negative parameter characterising the dispersion of the quantity values being attributed to a measurand (a property being measured), based on the information used.

MEASURING UP TO STANDARDS

The perfect measuring instruments are almost non-existent. Planned and regular calibration is necessary due to wear and tear, instrumental drift and frequent use. Users of measuring instruments have to be certain that the readings they obtain are accurate and within the acceptable tolerance of purpose of making the measurements, such as product specifications. The same is true for the associated software that comes with the instruments – it must be updated and patched as frequently as possible. As long as a measuring

WHAT TO CALIBRATE?

Examples of common measuring instruments that need regular calibration are:

Micrometers


Weighing balances

Verniers

Thermometers

Indicating meters

Gauge blocks

Weighing standards

instrument is used with various degrees of precision and accuracy, the need for calibration remains.

Calibration support is indispensable in the most active and relevant sectors of science and industry, such as climate change, nanotechnology, advanced materials, biotechnology, renewable energy and food safety. Malaysia's research and development in these sectors must meet all the calibration requirements to ensure compliance to quality standards and to be competitive in the world market.

How costly is it to neglect calibration? The answer is simple: the minimum cost of work required to reproduce the original performance from a neglected instrument is approximately equivalent to the cost of the total number of calibrations it should have had. Usually, the cost is much higher due to the added time and opportunity costs of waiting for accurate measurements.

CALIBRATION LEGISLATION

Poor results of measurement due to calibration error or misinterpretation of reported measurement results may lead to disputes in the court of law. There are laws in the country that specifically address measurement matters related to trade, enforcement and measurement standards. The Weights and Measures Act 1972 declares SI units as the legal basis for measurement in trade in Malaysia. In addition, the National Measurement System Act 2007 states that every measurement of measurable quantity shall be made in compliance with the requirements of the Act. Measurements made with questionable traceability to the national measurement standards may be considered void and not valid when used in trade. S&Q

ELEMENTS OF CALIBRATION

1. CONTROLLED ENVIRONMENT

Temperature, humidity, vibration levels, dust count and other factors must be carefully controlled.

2. APPROVED AND VALIDATED CALIBRATION PROCEDURE

Developed in-house or based on a standard procedure.

3. REFERENCE STANDARD

Calibrated by a higher-echelon laboratory.

4. INSTRUMENT TO BE CALIBRATED

The meter, device or item to be calibrated.

5. COMPETENT STAFF

Training records maintained and competency qualified by experienced staff.

6. MEASUREMENT UNCERTAINTY EVALUATION BASED ON ISO GUM

The procedure includes and uncertainty of measurement evaluation based on the ISO/IEC Guide 98:1993 - *Guide to the expression of Uncertainty in Measurement*

$$Y = f(X_1, X_2, ..., X_N)$$

$$u_c^2(y) = \sum_{i=1}^{N}\left(\frac{\partial f}{\partial x_i}\right)^2 u^2(x_i) + 2\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_j}u(x_i)u(x_j)r(x_i,x_j)$$

$$= \sum_{i=1}^{N}[c_i u(x_i)]^2 + 2\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} c_i c_j u(x_i)u(x_j)r(x_i,x_j)$$

(GUM) as follows:

7. SI UNITS

The units of measurement used must be according to the SI standard (kg, m, s, A, K, cd, Hz).

8. REPORTING

Prepared based on approved contents and endorsed by an approved signatory.

9. SOFTWARE VALIDATION

A validation procedure is used.

10. RECALIBRATION INTERVAL

Depends on the frequency of use or determined by the use of a statistical method.

11. QUALITY SYSTEM TO MS ISO/IEC 17025

Accredited service.

Contributed by the National Metrology Laboratory (NML). NML was appointed as the National Measurement Standards Laboratory under the National Measurement System Act 2007 (Act 675) with the responsibility for the establishment of national measurement standards and provision of measurement traceability. NML is a signatory to the CIPM-MRA since 4 October 2001. It is also the Custodian of Weights and Measures under the Weights and Measures Act 1972 (Act 71).

GREEN PROOF

ECO-LABEL

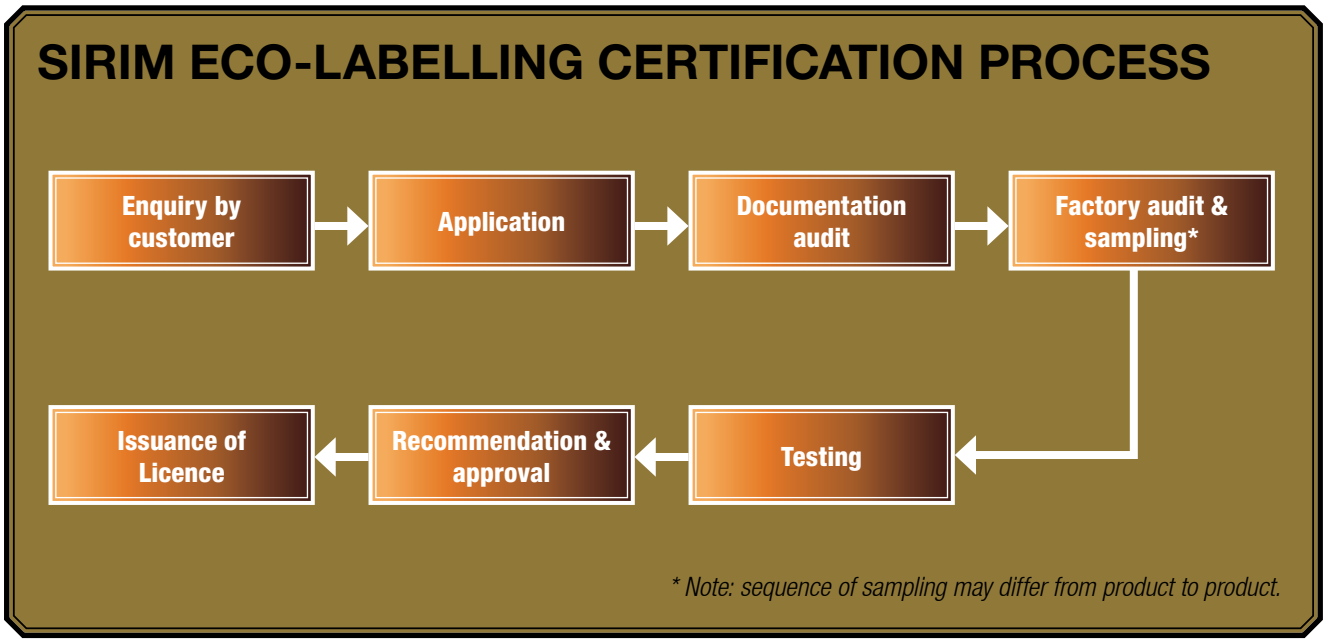
Any number of consumer and industrial products can now gain the SIRIM Ecolabel certification, which is fast becoming internationally recognised.

Everything we buy and consume has a cost. Consumer products may have impacts on our environment in terms of the natural resources they deplete and the pollution they cause throughout their life cycle. There are many points in a product's life cycle where negative effects can occur, and these include resource extraction, production, use and disposal.

Products such as recycled paper and recycled plastic items are designed to have a lower impact on our environment. When these environmentally-friendly products are labelled as such, consumers can distinguish them and use environmental criteria when making purchasing decisions.

The SIRIM Eco-Labelling scheme was launched in 2004 to provide environmentally-friendly Malaysian products with certification and a distinctive label to help promote them. Going by the International Organisation for Standardisation (ISO), there are three types of environmental labelling: third party labelling programmes, self-declared environmental claims and making environmental declarations. The SIRIM Eco-Labelling scheme is the first of these three types, and complies with ISO 14024:1999. It is a voluntary, multiple criteria-based, third party certification program which awards successful licensees the right to use the mark of the SIRIM Ecolabel on their products.

Under the SIRIM Eco-Labelling scheme, a product is independently tested and verified against preset criteria such as environmental degradability, use of recycled materials, non-toxic packaging material and, in the case of electrical and electronic products, non-toxic metal content. The SIRIM Ecolabel indicates the environmental qualities of the product within a product category with criteria based on its overall life cycle. These criteria levels



are designed to encourage the production and use of products and services that are significantly less damaging to the environment than other products.

After successfully undergoing the certification process, the licensee will be awarded a SIRIM Eco-Labelling Certificate which remains valid for two years. During this period, SIRIM auditors will conduct a surveillance audit to ensure on-going compliance. In addition, the product must be manufactured in accordance with industry quality and performance standards, while also complying with legal requirements.

TAPPING THE GREEN MARKET

The SIRIM Eco-Labelling scheme has generated significant interest from local manufacturers who are keen to tap into the growing market for environmentally-friendly products. For example, most local paint manufacturers are now licensees under the Eco-Labelling scheme. However, the appeal of environmentally sustainable products extends further than just local consumers.

The Malaysian Government is also actively involved in promoting the use of green products among its agencies. At the United Nations Framework on Climate Change Conference in December 2009, Malaysia pledged to reduce its carbon dioxide emissions by as much as 40% compared to 2005 levels. In order to realise this ambitious target, the government has established a number of initiatives to promote the adoption and application of Green Technology, one of which is green procurement. The government is currently developing a mechanism for green procurement to be implemented in government agencies as well as a national eco-labelling scheme to support this initiative. SIRIM is working closely with the government on these initiatives.

The SIRIM Eco-Labelling Scheme is also gaining ground overseas. The SIRIM Ecolabel became an internationally-recognised standard with the acceptance of SIRIM QAS International as a full member of the Global Ecolabelling Network (GEN). The Global Ecolabelling Network (GEN) is a non-profit international association of third-party environmental performance labelling organisations founded with the aim of improving, promoting, and developing the ecolabelling of products and services worldwide. SIRIM QAS International's membership in GEN attests to the credibility of the SIRIM Eco-Labelling Scheme and puts it on par with the ecolabelling schemes of other member countries. S&Q

SIRIM ECO-LABELLING CRITERIA

The following Product Criteria are currently available for the SIRIM Eco-Labelling Scheme:

- 005/2010 Biofibre Composite Construction Materials
- 006/2007 Food-Grade Lubricants
- 007/2008 Floor Mats
- 008/2008 Fabric Care Products
- 009/2008 Tableware from Biomass
- 010/2008 Adhesives
- 011/2008 Water-Based Adhesives
- 012/2008 Paper-Based Packaging Products
- 013/2008 Organic Fertiliser
- 014/2008 Recycled Rubber Products
- 015/2008 Shampoo Products
- 016/2008 Shower Liquid Products
- 017/2008 Solid Body Soap Products
- 018/2008 Recycled Plastic Products
- 019/2009 Paints
- 020/2010 Clay Roof Tiles
- 021/2011 Fibre Cement
- 022/2010 Ceramic Tiles
- 023/2010 Masonry Units
- 024/2011 Energy Saving Electronic Ballasts
- 025/2011 Fluorescent Lamps
- 026/2011 Printing Ink
- 027/2011 Luminaires and Light Source for Interior Lightings

The following Malaysian Standards have been derived from Product Criteria for Eco-Labelling:

- MS 2073:2008 Eco-Labelling criteria for environmentally degradable plastics packaging material
- MS 2080:2008 Eco-Labelling criteria for recycled paper
- MS 2225:2009 Eco-Labelling criteria for biodegradable cleaning agents.
- MS 2237:2009 Eco-Labelling criteria for electrical & electronic equipment & components with restricted hazardous substances.

Refer to www.sirim-qas.com.my for the latest criteria and Malaysian Standards updates.

To find out more about the SIRIM Eco-Labelling Scheme, contact us at:
SIRIM QAS International Sdn Bhd.
Sales, Marketing & Business Development
Tel: +603 5544 6400
Fax: +603 5544 6810
Email: qas_marketing@sirim.my

ANNOUNCEMENTS

UPDATES ON SIRIM QAS INTERNATIONAL CERTIFICATION

PLEASE REFER TO THESE WEBSITES FOR CURRENT INFORMATION ON PRODUCT AND MANAGEMENT SYSTEM CERTIFICATIONS.

www.malaysiancertified.com.my
www.sirim-qas.com.my

Contact: Norbaidzuri Mohd. Yusoff
Phone: +603 5544 6817
E–mail: baidzuri@sirim.my

UPDATES ON MALAYSIAN STANDARDS (MS)

THESE WEBSITES CONTAIN UP-TO-DATE INFORMATION ON MALAYSIAN STANDARDS (MS)

MS Development Structure:
http://smsonline.sirim.my
http://smsonline.sirim.my/FMainISC.jsp
http://smsonline.sirim.my/FMainISC_ENC.jsp

Industry Standards Committees (ISCs) managed by SIRIM Berhad. Currently, there are 23 ISCs ranging from ISC A on Agriculture to ISC Z on Environmental Management. You can also find the list of the Technical Committees (TCs) and Working Groups (WGs) established under each of the ISCs. Just click on each of the committees to get the information on their scope and member organisations as well as the list of MS developed by the committee.

Also available here is information on Standards Writing Organisations (SWO), the organisations appointed by SIRIM Berhad to undertake and manage standards development within a specific scope.

All the information you need about the stages of MS development, from request until final publication.

MS Development Process
http://www.sirim.my/std_dev/ms_flow/processflow.htm

Be among the first to get the latest information on the newly approved Malaysian Standards with this list of recently approved MS.

Recently approved MS:
http://www.sirim.my/std_dev/latest.doc

Approved MS, projects and drafts for public comment:
http://www.sirim.my/std_dev/h4_01.htm

Get the list of MS approved by the Minister, the list of projects approved by Industry Standards Committees (ISC) for development of MS and draft MS available for public comment. Draft MS for public comment can be downloaded from this page at no charge. Additionally, draft MS which are adopted in total from International Standards are available at the charges indicated. Hardcopies of these draft standards can also be obtained from:

SIRIM Berhad,
P.O. Box 7035,
40700 Shah Alam, Selangor.
(Attn: Standards Research and Management Centre)
Tel: 603 – 5544 6366; Fax: 603 – 5510 6389
E-mail: std_develop@sirim.my

MS Online
http://www.msonline.gov.my

The MS Online system provides users with an easy and secure way to view, purchase and download full MS texts online. Payments may be made by credit card. The system also features advanced functions and allows you to search by MS number, Title, Subject, Year and/or by keywords.

MEASURE UP TO GLOBAL STANDARDS

OUR SERVICES

CERTIFICATION

• Quality Management System (ISO 9001, ISO/TS 16949, ISO 13485 and MS 1900)
• Environmental Management System (ISO 14001)
• Occupational Health and Safety Management System (OHSAS 18001 and MS 1722)
• Information Security Management System (ISO/IEC 27001)
• IT Service Management System (ISO/IEC 20000)
• Food Safety Management System (ISO 22000, HACCP and GMP)
• Forest Management • Chain of Custody (COC)
• Business Continuity Management (BS 25999-2) • Social Accountability (SA 8000)
• Roundtable on Sustainable Palm Oil (RSPO) • RSPO Supply Chain
• Clean Development Mechanism (CDM) • EcoLabelling
• Product Certification • Product Listing • Modular Coordination
• Electromagnetic Compatibility (EMC) • Communication Equipment
• Malaysian Brand • NGV Workshop • Ready-Mixed Concrete
IECEx 03 • IECEE-CB Test Certificates

TESTING

• Chemical and Consumer • Civil and Construction • Electrical and Electronic
• Fire Protection • Mechanical • Radio Frequency & EMC • IECEE CB Test Reports

INSPECTION

• Engineering Inspection • Inspection Services

SIRIM QAS INTERNATIONAL

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

Contact Sales, Marketing & Business Development:
603-5544 6400 or log on to www.sirim-qas.com.my
Building 8, SIRIM Complex, 1, Persiaran Dato' Menteri, P.O. Box 7035, 40700 Shah Alam, Selangor, Malaysia

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- **Fire Protection Testing**
- **Mechanical Testing**
- **Radio Frequency (RF) and Electromagnetic Compatibility (EMC) Testing**
- **Issuance of IECEE-CB Test Reports**

AND IF IT MAKES IT THROUGH, WE PASS IT

SIRIM QAS INTERNATIONAL SDN. BHD.
(A wholly owned subsidiary of SIRIM Berhad)

Building 8, SIRIM Complex,
No. 1 Persiaran Dato' Menteri P.O.Box 7035 Section 2,
40700 Shah Alam, Selangor Darul Ehsan.

Tel : 603 - 5544 6400 Fax : 603 - 5544 6810
Email : qas_marketing@sirim.my website : www.sirim-qas.com.my