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REPORT

on

RESOURCING and SUPPORTING STANDARDIZATION

in the APEC ECONOMIES

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for the APEC BUSINESS ADVISORY COUNCIL

JUNE/ JULY 2005

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CONTENTS

1.1 INTRODUCTION AND BACKGROUND TO THIS REPORT

The APEC Business Advisory Council (ABAC) has agreed to examine the comparative approaches to resourcing and supporting the standards infrastructure in the APEC economies, drawing on experience from the successful standards system in the European Union. The objective is to help to set a longer-term agenda for standards development and application in the APEC countries.

As part of this exercise, ABAC have appointed me to prepare this report, against a brief dated April 2005, subsequently slightly refined and received in May 2005. I have discussed my appointment, and the brief, with Michael Crouch.

My background and experience over the last two decades is briefly summarised in the Annex, and it is from this background that I have considered the issues. I must emphasise that the opinions and comments are necessarily mine alone.

My observations and proposals cover a number of aspects of the nature and current situation of standardization in general, so as to reach reasonable understanding of the challenges and the potential for good and sustainable progress in the APEC countries.

I have no doubt that there are useful lessons to be learned from the European experience, but of course it is important that APEC should not follow blindly. Not only are the circumstances in APEC very different to those that have existed in Europe over the past 20 years , but a few aspects of developments in Europe have really not worked as well as might have been hoped or be generally believed. An intelligent and selective approach is strongly recommended. As Vice President of CEN I initiated the study into the financing of European standardization quoted in this report, and as V-P for policy I started a strategic review of the challenges and opportunities ahead. Many of the outcomes are relevant to APEC.

From my knowledge of the APEC countries and the widely varying circumstances, I well understand that progress will require some important hurdles to be tackled, and resources to be organised. Some of these "political" steps may require time to be considered and implemented, and the resources necessary to make fast progress could be difficult to assemble. My years as a permanent member of the Council of the International Standards Organisation ISO, and as Chairman of its Finance Committee, have exposed me to the great variations between infrastructures and NSBs across the world and to the particular challenges faced by those from developing countries. The interaction between the APEC countries and the international bodies, including ISO, IEC and CODEX Alimentarius will be an important element in future success.

The wide diversity of the infrastructures across the APEC countries, and their respective NSBs, makes it clear that simplistic initiatives on the basis of "one size fits all" have little prospect of success. A selective structured approach to strengthening the infrastructures is recommended, starting with the least strong. If the foundation blocks can be well understood and put in place, then I believe that good progress becomes both feasible and sustainable.

1.2 EXECUTIVE SUMMARY

1.2.1 The brief

*The brief for this report was given by ABAC dated April 2005, was discussed with Michael Crouch in May 2005, and is confirmed by the MoU signed in June 2005. My experience in industry, and then as Director of British Standards (including as Vice-President of CEN, and Chair of Finance Committee of ISO) illuminates this report, but the opinions and recommendations must be mine alone.

1.2.2 What is standardization?

First we must clarify what is meant by *standardization* – it is not only formal standards, but all types of public/private and formal/informal, fitting into a system of *applying* them through conformity assessment/ certification/ market surveillance.

The "virtuous circle" in 2.2 illustrates standards supporting certification and inspection, and then the market intelligence feeding back into new standards. It is a good way to visualise the holistic system.

To raise awareness of standardization, its benefits and its demands, I suggest that the major stakeholders are prompted on those subjects which are of most benefit to them, and where it is feasible for them to take action, including the following (full list in 2.3):-

- **direct action** by governments on establishing multilateral agreements with others (based on standards) for mutual recognition and acceptance of goods and services, policies for education, procurement, regulations, and market surveillance, and establishing multilateral agreements based on standards and aimed at increasing international trade,
- by industry on creating some collective organisation where none exists, on standards development, assessment of international standards, by others in participation, and by the NSB in involvement of stakeholders (particularly industrial/commercial), and in media links,
- and **funding** by government for specific targeted work, conferences/seminars, regional initiatives, etc.,
- by industry for specific new standards, purchasing/distribution, and
- by others for specific new work, feeding informal standards into the regional or international systems.

In order to generate more interest and effectiveness, in 2.3 the steps taken in BSI to draw closer to the governmental and commercial worlds are reviewed. These include the involvement of stakeholders in the governance and direction of the NSB, liaisons with trade and industry, and media linkage.

1.2.3 Who drives standardization?

The question of who provides the greatest and crucial input to standards, and who gets the benefits, is fundamental to any efforts to improve awareness and strengthen the situation at national, regional or international levels. European studies have shown

quite clearly that 90%+ of input is from industry (directly or indirectly), therefore even if this level is not practical in all of APEC, the harnessing of industrial support is absolutely crucial. This may require that steps are taken to prompt some alignments of industry in those countries where little commercial organisation exists.

The benefits flow broadly to all the stakeholders – to governments by a significant addition to growth of the national economy, to industry by technical and marketing advantage to the participants, and to all by the operation of more orderly markets. Standards form the basis of conformity assessment/ certification/ and market surveillance.

A number of case histories are summarised in 3.3, to illustrate the clear benefits of involvement in national and international standards development in order to enhance the participant's technology and market penetration, and to show how the application of standards across sectors drives improvement, efficiency and profitability.

1.2.4 Strength and influence

Turning to standards developers within the national infrastructure, and particularly the NSBs themselves, their strength and influence largely depend on their constitution/status, funding sources and patterns, international activity and regional collaboration.

I have no doubt that a reasonably high level of industry linkage is essential, although it must be acknowledged that present levels of government funding and control may be difficult to avoid in the case of the more restricted country infrastructures, at least in the short term.

Funding inevitably brings influence and direction. Therefore to bring greater industry/customer focus, funding from that source should be encouraged. Governments have requirements related to regulations and surveillance, but it is preferable for these aspects to be subject to funding which is strictly targeted and accounted, rather than unfocussed general funds which carry the risk of the NSB losing its customer/market sharpness.

The international bodies ISO/IEC/CODEX should be supported, but in order to leverage more benefit from them it will be advantageous to establish more collaboration between the NSBs in APEC, by common intelligence transfer, some shared services/functions, etc. This would provide a two-way benefit to all concerned.

1.2.5 The European experience

The European experience in standardization over the last 25 years has been generally very successful in terms of support for legislation on harmonisation, creating open internal market, generating international trade (and arguably protecting the home market). In parallel, the leading NSBs have gained in strength and influence. There are some pointers which should be useful for APEC.

Four particular policies have been instrumental in this process:-

- linkage of standards development programmes to "political" objectives for harmonised society protections, open markets and innovation.
- drawing existing (strong) NSBs into a "quasi-federal" operation in order to achieve
  more rapid progress
- providing finance for essential coordination functions and pump-priming, including
  unblocking bottlenecks on key subjects
- a degree of coordination on international issues.

The application of standards in a regional conformity assessment/certification system has been more problematical. The existing strong private marks (e.g. BSI's kitemark) are thought by some parties to have a national flavour, and hence enable national preferences to subtly distort a truly open internal market. A European "Keymark" has been introduced, but much time and money may well be required before this could become really effective. But it may be interesting to observe.

The constitution and funding of the European bodies is very diverse, but with the exception of the recent members from the FSU countries, generally less than 50% comes from government. Industry, via participation in the development work, standards sales, membership subscriptions and certification together support by up to 90%+ overall. *Importantly*, this is *not* all funding but includes the huge contribution from participation.

European central funding has been carefully directed towards specific contracts for key work both inside and beyond the EU, and has acted as pump-priming and blockage-remover. Also some important standards development in **new technologies** and **society issues** has been given impetus by very targeted funds, both towards formal and fast-track informal standards.

A key factor has been that the European standards are subject to majority voting by the NSBs before approval to publish, and when published they are obliged to adopt them within a fixed period (usually 6 months), *and* then to withdraw all conflicting national standards. This contrasts with most international standards, where there is no general obligation to adopt them – although it could be a matter of policy to do so. It would be possible to have a regional collection of standards (probably based on adopted international ones), carrying some obligations regarding adoption and exclusivity at national level. At least this would have the effect of ensuring more attention to the subject!

1.2.6 The APEC situation

Within APEC there is wide diversity of national situations, with highly developed economies alongside developing ones, and strongly established NSBs alongside small ones with limited activities.

This drives to the conclusion that no one single solution can apply in order to make real progress. But some general conclusions are that closer industry linkage will be vital (even if this reduces government involvement), and that the small scale of many of the NSBs means that some forms of regional collaboration are advisable.

1.2.7 Comparison of the European and APEC arrangements.

The comparisons between the different situations reinforce the messages I have covered in this report. I have no doubt that the European experience, and the lessons that can be learned from it, can be very helpful to APEC. Some of the objectives and proposals arise from these comparative analyses.

1.2.8 The Objectives and Proposals for APEC

The objectives and proposals are summarised in the following Section, and I will not repeat them here. The general thrust can be summarised as:-

- clarify the objectives and ensure that the stakeholders buy into the whole system.
- identify the key players, who will be crucial in achieving progress.
- raise awareness of standardization, and hence gain more support.
- strengthen those NSBs in order to ensure delivery of benefits.
- engage governments more effectively, at political and operational levels.
- establish better industry linkage in many cases.

I have suggested the prioritisation which will doubtless be needed.

I believe that a considerable uplift in activities and effectiveness of standardization in APEC is both desirable and achievable. There are useful pointers from the European experience, but the circumstances are different in many APEC countries.

This initiative by ABAC is important and timely. I will be glad to proceed further if required.

1.3 SUMMARY OF OBJECTIVES / PROPOSALS FOR APEC

Throughout this report, I have highlighted the points which I believe are crucial for progress in strengthening and vitalising the standardization structures and bodies in the APEC countries. This must recognise that the systems in some countries are both well established and reasonably developed, so that major changes would neither be welcome nor perhaps necessary in the shorter term, but the support of all the countries and players is vital.

I summarise the key issues which I believe should be addressed, which can bring substantial benefits to all the stakeholders. In each case I note the relevant section(s) in this report where more detailed comment and considerations have been covered.

O/P.1 CLARIFY THE OBJECTIVES , and ensure that they are generally accepted.

- strengthen the development and harmonisation of standards
- raise awareness of the benefits of standardization
- address the constitutional status of the NSBs.
- ensure that the context is of a standards/certification/market surveillance system; with standards by the NSB or other SDO, certification by existing international certification organisations, and market surveillance by government at central and local levels.
- support multilateral agreements by governments, underpinned by standards.

(see sections 2.1 and 2.2)

O/P.2 IDENTIFY THE PLAYERS, so that they can be brought into the exercise, and will support the initiatives.

- which government departments are most relevant and supportive?
- what industry associations or groupings are active and sympathetic, or how can individual companies be involved and then act as evangelists/catalysts?
- what other groups are relevant, active and prepared to participate (e.g. consumers, environmentalists, etc.)?

(see sections 3.1, 3.2 4.1, 4.2)

O/P.3 RAISE AWARENESS, so that the key players will be supportive and provide the ongoing environment and funding necessary for sustained progress.

- prepare promotional material (building on what others have done, and initially perhaps reasonably simple/cost effective) and disseminate to all the key players.
- stimulate events (conferences/seminars, etc.) to convey the messages.
- address government departments, pointing out the good evidence of the great contribution standardization can make to a national economy.
- approach industrial bodies with the material which illustrates the benefits to innovation, market development and profits.
- stimulate other stakeholders, appealing to their self-interest, so as to generate their support and participation.

(see sections 2.3, 3.1 ,3.2, 3.3, for roles of the parties which should be stimulated, and section 3.3 for some brief case histories).

O/P.4 STRENGTHEN THE INFRASTRUCTURES (particularly NSBs, because they are so often the main focus and funnel for standards work). Some of the NSBs in the APEC countries need to be extended and strengthened in the context of the system of standards and their applications, to enhance their relevance and performance.

- Review their constitution, to achieve much greater market linkage, by ensuring at least some degree of independence from government. Achieving greater involvement of industry in strategies and programmes of work, thus avoiding total government control of operations.
- Seek collaborations with other NSBs in the region, both to improve intelligence and responsiveness to the market, and to reduce costs/extend collective activities..
- Inspire more direct support and funding from industry, by enhancing the relevance and responsiveness of the standards development processes, including by involvement of stakeholders in governance and strategies, whether by groups of companies or associations where they exist, or by individual companies as a precursor to association. This includes undertaking particular programmes of sponsored work, and disseminating the relevant standards.
- Particularly if good collaborations can be developed, a Code of Conduct between the NSBs could be helpful. The European experience has found that this can strengthen confidence and extend the range of work.
- Considering a policy of *obligation* to adopt a regional collection of standards (international standards which are agreed to be adopted regionally), and this could be linked to the corresponding withdrawal of conflicting national ones. Without some driver corresponding to the European obligations, it might be difficult to sharpen attention. NOTE this would probably also involve action by government in many cases.

(see sections 4.1-4, 5.4-7, 6.2, and 7)

O/P.5 ENGAGE GOVERNMENTS in the process of improving the relevance and responsiveness of the whole system, even though this could mean less control by government (but still *fully* recognising public duties and accountability).

- Fully recognise the principles of intellectual property rights, and enshrine them in the law.
- Support multilateral agreements based on standards, to enhance trade.
- Leverage accession to the WTO to secure improvements in the infrastructure.
- In crucial subjects, be prepared to link the development of new laws into support for particular standards adoption programmes (viz. EU standardization in support of directives)
- Apply pump-priming funding to coordination/harmonisation standards work, and to removing bottlenecks in critical programmes (e.g. the Eurocodes in EU)
- Apply funding and other support to the work of bringing target NSBs up to speed, probably best by letting contracts to experienced NSBs or people who are able to bring the right experience and skills to the work.

(see sections 3.1, 3.2, 4.1-4, 5.1-7, 6.2, 7)

O/P.6 ENGAGE INDUSTRY so as to improve the market relevance of the standardization system and outputs, acting as effective conduit for intelligence to/from the market, and be a really effective "evangelist" for standards

- where trade associations (or the like) do not exist, encourage individual companies into involvement, as a catalyst to broader association.
- To supply support (by funding and *crucially* by participation in standards strategies and development) and carry the messages on the benefits of standardization, and encourage the gathering of data for new case histories.
- To participate in the governance of organisations involved in the processes of standardization
- involve the certification industry, and governmental bodies involved in market surveillance, in the initiatives.

(see sections 2.1-3, 3.1-3, 4.1-2, 5.2-3)

PRIORITISATION

1st My proposal would be to treat the preparatory matters as a first priority, to ensure that all the players are in line, therefore items O/P..1 and O/P.2..

2nd Raising of awareness is certain to be an ongoing activity, and the sooner this is promoted, with supporting evidence/case histories, the better it will be. Item O/P.3

3rd In order to establish the new understandings and ground rules, I suggest that government and NSB matters are addressed, so O/P.4 and O/P.5

4th The importance of industry support and participation in this exercise is fundamental throughout. But I believe that it will probably be helpful to be able to demonstrate new thinking and new arrangements before expecting an enormous shift in thinking by industry. Therefore O/P.6 to be as soon as demonstrable movement occurs in government and NSB arrangements.

CONCLUSION

I believe that a great uplift in the level of activities, relevance and effectiveness of the whole standardization infrastructure is both desirable and achievable for APEC. This report is intended to give an overview of the present situation and how strengthening might be achieved, learning from some of the successes in the European Union over the last 20 years or so. It will not be a quick or easy task, but an exciting one.

If clarifications or further work are required, I will be glad to assist ABAC.

David W. Lazenby CBE, DIC, C.Eng., Hon.FCGI

2.1 WHAT DO WE MEAN BY STANDARDIZATION?

"Standards are a fundamental building block for a successful modern economy and society. Basic standards such as weights and measures have existed since early civilisation, and they have always been a key to manufacturing and trade. Today there are many forms of standards and various ways in which they are developed and used.

Not only do standards underpin critical aspects of manufacturing and technological development, but they are increasingly applied to management, services and other areas of business and government, including health, safety and the environment."

For APEC, this is the underlying message to all the stakeholders, and ABAC can make this a fundamental part of its efforts to raise awareness, and hence generate support.

It is clear that the role of standards today is more important than ever. But *standardization* means more than just the process of developing formal standards by a process of consensus, important though that certainly is.

Standardization encompasses the establishment and application of an agreed set of solutions to any set of circumstances which happen repetitively. It should bring great benefits for all concerned, and to society in general, provided that it is founded on full participation and agreement by all the stakeholders. It can encompass technical specifications, specifications for services, codes of practice (whether for technical activities or the conduct of groups or individuals), guidance or the basis on which regulations can function. Standards define key features of products or services, often defining performance, reliability, health & safety, and increasingly covering environmental impacts and sustainability.

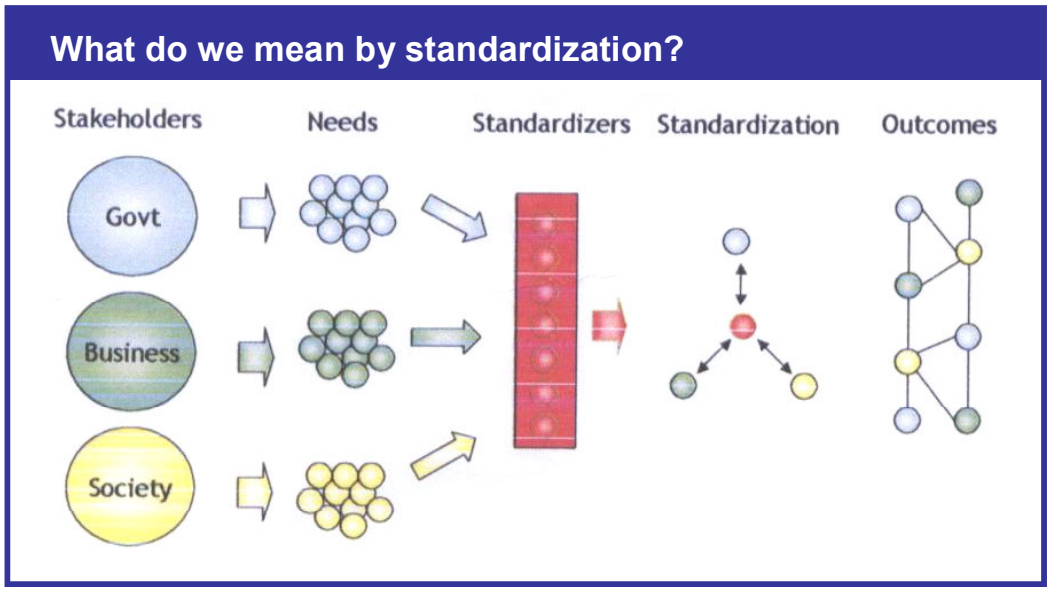
Some newly emerging technologies, such as IT, nanotechnology, bio-industrials, etc. will often be developed best and fastest by informal industrial agreements, or alliances (which the leading NSBs are well able to facilitate).

The stakeholders are all the players who take part in the processes, whether by sponsorship/funding, direct participation in the development work, applying the outcomes (e.g. by specification of items, conformity assessment, certification, etc,) and therefore can be categorised as falling within government, business, or society at large (e.g. consumers).

The needs for new standards development can be identified by any of the stakeholders, and may relate to government needs for support to regulations or legislation, by industry for technical harmonisation or market development, or by societal bodies for public awareness, etc. A very active NSB will also pick up messages from its own stakeholders, to enable it to anticipate demand and start the processes of development.

The standardizers may be the NSB of the country, on which I pay most attention in this report.. But they may also be other expert groups such as trade associations or government bodies, which will often feed their work through the NSB.

A simplified diagrammatic representation of the elements and the participants can be shown thus :-



At the end of the process, the outcomes would normally be standards of some form, which might be private (perhaps to an industrial group), informal or formal at national level, and they could then be put to the international bodies (ISO, IEC or CODEX), so as to make them part of the global collection. This last step can be useful if the indigenous industry has provided input in order to generate wider international markets for its products or services. Conversely, existing international standards from ISO, IEC or CODEX can be adopted nationally, if they are appropriate and useful.

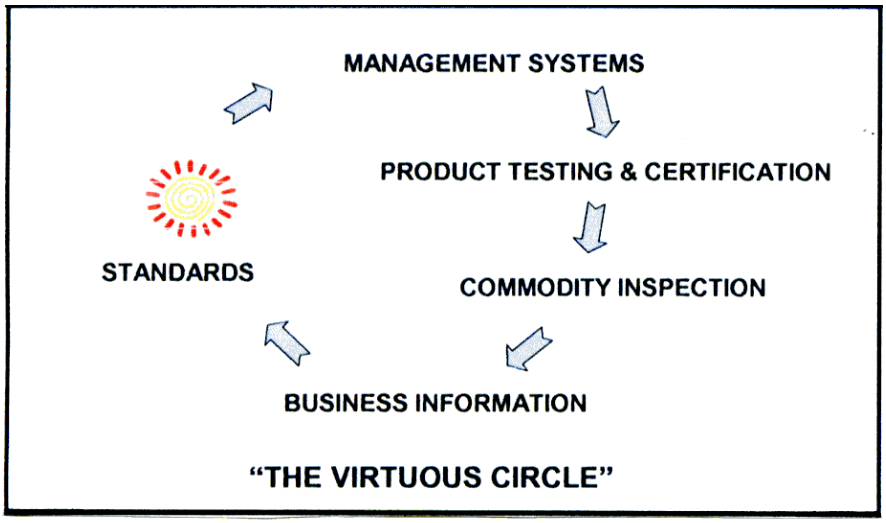
The quotation from the United Kingdom's National Standardization Strategic Framework (with which I was closely associated in 2003) which is highlighted at the beginning of this Section 2.1, is accompanied by an analysis of the essential elements of standardization and those aspects which need attention currently, and is shown in Annex A.1.1. The challenges are basically the same in APEC, so the programme in UK has useful pointers for APEC.

FOR APEC there are advantages and difficulties with the international network, which I discuss in Section4.3 and 4.4.
I believe that it is useful to identify which players are involved in the various stages of the development process, and thus target promotional activity in an effective way. In section 2.3 I deal with the various areas of activity which need support and participation by the relevant players.

2.2 HOW DO STANDARDS/CERTIFICATION/ SURVEILLANCE COMBINE SYSTEMATICALLY?

I believe that it is very important that there should be clarity and understanding on the systematic combination of standards with conformity assessment, certification (of products or management processes) and in turn supported by market surveillance. "*Standards are of no use if they are not used".*

I call this the "virtuous circle" which supports a dynamic and innovative economy. The converse would be a downward spiral of decline of an economy with selfish, short-term actions, which could be characterised as a "vicious circle".



In Europe, as I will review, there has been a clear understanding that standards in isolation will not drive a radical improvement in the functioning of the market. It is necessary to build an effective and systematic application, which I discuss in Section 5.2. In addition to the established private certification marks (generally of the leading NSBs – e.g. BSI's Kitemark, AENOR's mark in Spain, etc.), a recent development has been the establishment of the "Keymark" which is based on conformity assessment to *European* standards.

Although CEN itself does not undertake assessment and certification activities, certification bodies may apply to the NSBs which are CEN members to use the Keymark for certification schemes in those countries.

<u>FOR APEC</u>. In APEC there is no comprehensive set of regional standards, but a regional mark, based on an agreed collection of adopted international standards, might be feasible, as a means of stimulating regional interest and activity. The extent to which ABAC will be concerned with the wider issues of the application of standards must be for their decision. But the standards infrastructure should be organised and resourced at least with the knowledge of how the whole system works, even if this is not initially fully covered in this exercise.

2.3 RAISING AWARENESS OF STANDARDIZATION

It is generally agreed that one of the principal challenges is to convince all the stakeholders (governments, industry, consumers, certifiers, etc.) that standardization is crucial to the success of any economy, and that it is therefore in their interest to support it. Support is necessary in terms of funding, participation in the processes, and in recognition and acknowledgement.

I believe that a good starting point is to consider what part each stakeholder can play, recalling who are the greatest beneficiaries from the system (as I have analysed in 3.2 and 3.3 following). At least a start could be made by appealing to each party's own self-interest, to more vigorously pursue these aspects which it handles. I suggest that the following will be a good list of the basics:-

SUPPORT BY ACTIONS

- adopting standards as the basis for general policy by governments
- entering bilateral and multilateral intergovernmental agreements for trade/industry, based on standards
- organising inspirational/ informative conferences, etc.
- including awareness in education (particularly at secondary & tertiary level)
- adopting procurement of goods & services based on standards
- ensuring that regulations are standards based
- linking market surveillance to real standards by industry
- participating fully in standards development in their subject area
- assisting in assessing international standards before adoption
- stimulating wider industry interest amongst their peers by others
- representative participation in the development phase (e.g. consumers)
- publicising the benefits of patterns of purchasing based on standards.

by the NSB itself

- involving the stakeholders in the direction
- participating in relevant promotional events
- generating articles in journals (particularly re business) and other media).

SUPPORT BY FUNDING

By governments

- funding work by the NSB of the country (*targeted* rather than blanket funding, so as to maintain the sharpness of the NSB).
- sponsoring/organising conferences to promote knowledge/appreciation.
- arranging regional work (maybe contracting a suitable competent body to re-organise existing national standards, and identify where there should be adoption of international ones

By industry –

- funding specific standards development
- purchasing standards (and associated material) for own use AND for distribution to others, e.g. customers.

By others

- paid attendance at conferences, events, etc. (e.g. consumers)
- sponsoring specific standards development.

By the NSB

- paying for promotional activities
- contributing to regional actions/activities

RAISING AWARENESS

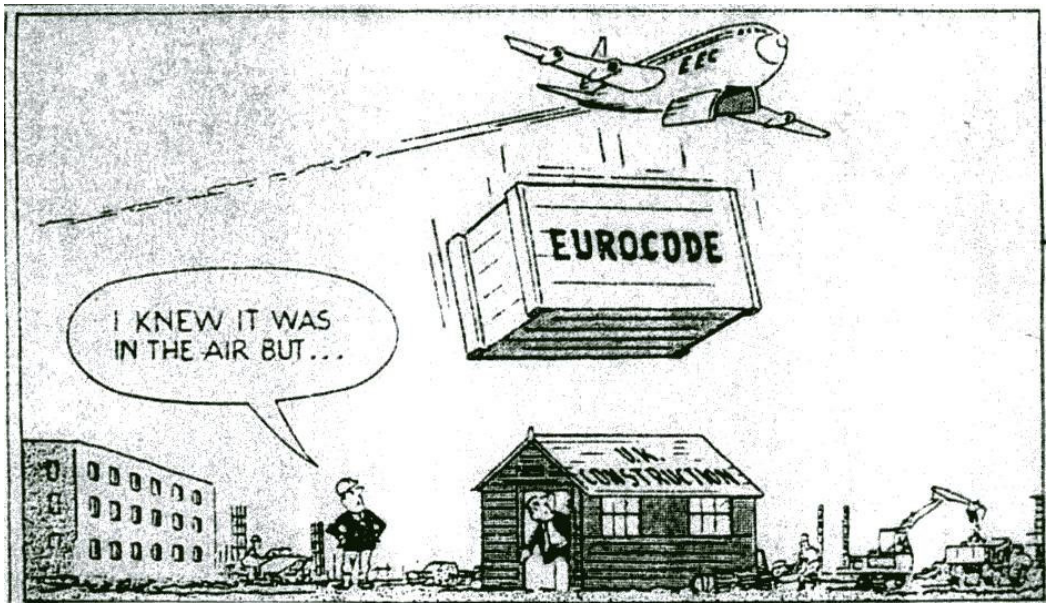
The challenge of raising awareness of standardization, and capturing sufficient attention and support from all the stakeholders, particularly industry, is a global one. From my experience I believe that a key factor is to involve the players in as many aspects of the work as possible. This can cover strategic planning, advice on priorities, assessment of new work, and of course direct participation in the drafting.

As Director of British Standards, I and my team made great efforts to draw the stakeholders closer to us. Some of the methods were:-
* Encouraging membership of our advisory committees dealing with strategies, overview of programming issues, etc. These are appealing to industry and trade associations because participation can directly influence the usefulness of the outputs.
* Meetings with sector groups on a regular basis, and involvement with their own events (e.g. annual meetings) are very productive.
* Staff of the NSB should be ready to contribute to conferences/ seminars/ publications, perhaps dealing with specifics, but taking the opportunity to broaden out to standards and their applications in general.
* Contacts with the media, particularly business-oriented ones, is useful. To provide a contact point for key journalists/broadcasters will often give the chance to comment on current issues.

All of this requires effort, but the results can be very rewarding.

In matters of Public Relations, it is well known that a "multiplier effect" usually operates. A combination of initiatives, including a variety of methods, will be effective in achieving quicker results. It can be useful to hit a variety of targets, both serious and more light-hearted.

I show a rather famous cartoon published some years ago in the leading English-language journal for the construction industry which aimed to create anxiety about, and hence attention to, the new generation of design standards (the Eurocodes). It had considerable success, and shows an example of what can be productive when used in combination with others.



FOR APEC, I propose that the approach should be both by "the stick and the carrot", whereby efforts should be both to emphasise the benefits and performance improvements for government, industry and society, but also the disadvantages of not proceeding along a sound standardization route. In Europe there has been some success in this, but more remains to be done.

There will be high level goals, particularly for governments, in terms of influencing markets and stimulating trade, and thereby achieving progress on many society issues such as employment, public health, etc. Much of this is beyond the remit of this present report, but could well be taken up later.

At a more immediately practical level, I suggest that all the lines listed in 2.3 above are pursued whenever opportunities arise. All these activities are subjects in which each stakeholder is active, and on which they can be challenged, either to do it, or to do it better.

The overall effect would be to not only raise the awareness and profile of standardization, but improve the activities and usefulness to the customers.

3. INPUTS TO THE SYSTEM, AND OUTPUTS/ BENEFITS

The age-old question of who makes the greatest input to, and derives greatest benefit from, the whole quality system (of standards and their applications) is necessarily a complex one But there are some things which are quite clear, and these have been demonstrated and backed-up by research studies.

It is true that there are often attempts by some stakeholders to create a smoke-screen of misunderstanding in order to gain more influence or leverage over the direction, scale and scope of the system. As an example, CEN was faced with a difficult situation in the late 1990s when the European Commission started to question the nature and scope of standards in Europe, and the form and means of dissemination of the results of the work, in relation to European Directives (laws) and the operation of an open internal market. There was a concern that their selective funding of some activities might be focussed on those aspects of standards related to the political objectives *only*. There was consequently a debate about the feasibility of the standards being produced in separate parts, dealing with political/regulatory matters on one hand, and the technical content benefiting industry and society on the other. This was eventually seen to be impractical, and very counter-productive, but it led to interesting consideration of the "strings" attached to funding by any stakeholder and opened some avenues of reflection which were instructive.

TWO IMPORTANT STUDIES

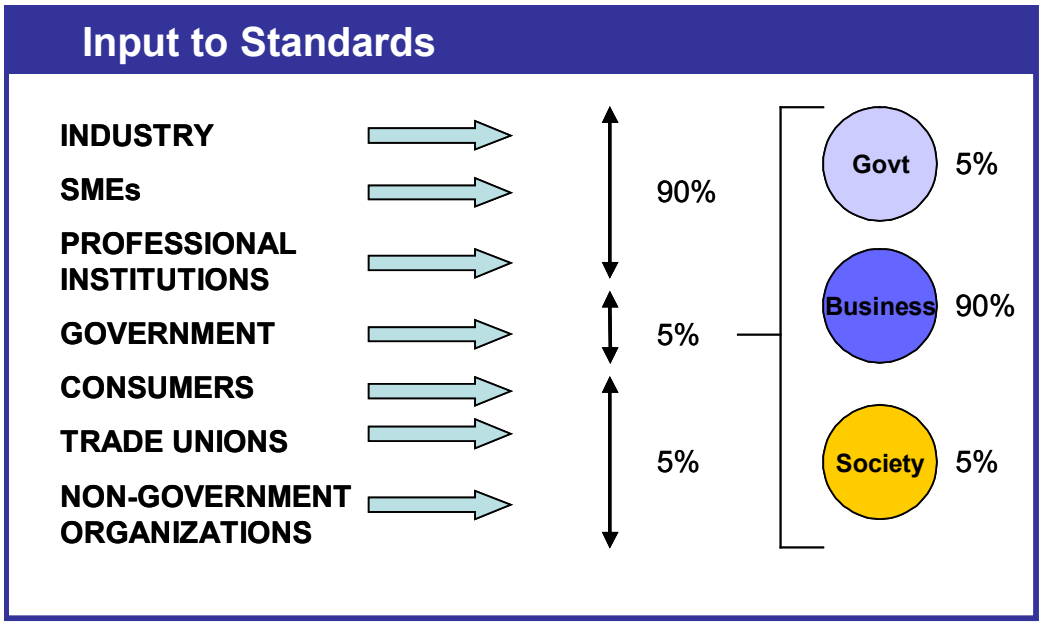
Importantly, the debates on this topic firstly inspired CEN to commission an in-depth study of the current and future funding of standards, and the expectations about the outcomes. The results are arguably some of the most authoritative available today. They help to clear some misconceptions and misunderstandings, and in respect to the ABAC study they enable us to identify the priorities in harnessing the necessary support for the initiatives in mind. Consultant Roland Berger & partners, of Germany, conducted in-depth interviews with several NSBs, leading industrial companies, departments of some national governments, and one or two other stakeholders including consumer groups. The results are quite clear on the sources of funds and other inputs, and there is even some consistency on the influences and trends for the outcomes.

Secondly, at the same time, the German NSB, DIN, conducted an important research project to evaluate how standardization contributes to success for a national economy and individual stakeholders. This study was undertaken for DIN by the Fraunhofer Institute and the Technical University of Dresden on their behalf.

For APEC these studies are probably the most authoritative and up-to-date analyses of the specific benefits to industry, and a national economy which flow from sensible and consistent application of standards and a standardization system. The results demonstrate the important benefits which each of the stakeholders can achieve, and ABAC should make good use of these outcomes, which have been published, as ammunition in the battle to convince all the stakeholders (particularly industry) of the benefits available.

3.1 WHO MAKES THE INPUTS TO THE SYSTEM?

It is **fundamental that standardization is founded on the expertise of those people and organisations which work in the subject area. By and large, it is industry and business which do so. Governments and other stakeholders do not generally originate the knowledge and experience which are the bedrock of standards. Hence it is not surprising that the general pattern of contribution to standardization is dominated by industry in those countries where the infrastructure exists to enable this to take place. I believe that where this does not apply, a priority should be to prompt its formation – see also 2.3.**



The results of this recent research in Europe (which reasonably reflects the situation in most of the *developed* countries) shows overall support can therefore be categorised

INDUSTRY	90 % +	(via direct participation in the work, sponsoring projects, membership dues,+ purchases of standards, etc)
GOVERNMENT	5%	(via funding of NSBs, pump-priming (e.g. new technologies, targeted sponsoring of activities for regulations)
OTHERS	5%	(e.g. consumers, individuals, etc.)

Of course there are variations between sectors and subjects. But fundamentally the process is generally industry-driven, even where governments may call for standards for public purposes, or stimulate work to link into regulatory systems.

FOR APEC this underlines that some government stimuli are often thought necessary, maybe correctly so, but it will be essential to bring industry along with the initiatives. It helps to underline the need for determined efforts to capture industry's attention and support. Trade associations, where they exist, can be rather self-serving , but by harnessing them in "partnership" with standardisers effective linkages to their members can be mobilised so as to improve matters.

3.2 WHO HAS INFLUENCE AND GETS THE BENEFITS?

All the stakeholders derive great benefits from standardization.

Almost all *industries* like to operate in an orderly marketplace, with minimal risks and maximum penetration internationally. The few exceptions, where formal standards can be thought to be unhelpful or irrelevant, can be serviced by other means, as I explained in Section 2..1, and they do not negate the general point.

For *governments*, the need for public protection and welfare guides the expectations and uses of the outcomes. There may well be a need for initiation of some specific standards work, at least to ensure the relevance and applicability of the results, for desired regulatory purposes.

For *society* there are great benefits, in terms of both behaviours and efficiencies.. Specifically *consumer groups* (often rather poorly organised and resourced) can participate in drafting of standards, bringing their views on consumer safety and convenience. Not only does this counterbalance the input of manufacturers, thus impacting the offerings on the market, but then benefiting from the more orderly and informed nature of the markets.

The DIN study, to which I have referred above, showed clear evidence that the widespread use of standards in the German economy has added at least 1% improvement to the growth of the German economy. Together with the certification and surveillance systems which run in tandem, this is an enormous demonstrable contribution.
From a macro-economic perspective, standards are shown to make a greater contribution to economic growth than patents or licences. Export-led industries make particular use of standards in opening-up markets. And importantly standards and their applications help technological change. Innovation alone is not sufficient to maintain competitiveness, but the efficient dissemination of innovation via standards is a pre-condition for economic growth.

FOR APEC, good use can be made of some of the outcomes of the DIN study, in terms of promotion of the benefits of standards in order to gain more support from industry and governments. Even though all the stakeholders may not be fully involved in the initiatives over the next few years in some countries, they could provide useful support, and it is better to reduce apathy!.

3.3 SOME BRIEF CASE HISTORIES

A full presentation of case histories is beyond the scope of this report, although it could be picked up at a later date. In the meantime, I have noted the following brief items which help to paint the picture of broad industrial benefit flowing from the application of standards:-

(i) German car-maker Volkswagen developed a system for securing child-seats in cars, which they wished to adopt globally. By formulating this as a standard, and via DIN passing it through the international processes for adoption as an ISO standard, they achieved a competitive market lead, could have a single solution globally, and provided real benefit to society.

(ii) Again the car-maker Volkswagen developed a design standard for "maintenance oriented design" in order to facilitate all the various aspects of maintenance in today's complex automobiles. It has led to great improvements in this respect, and led to a reduction of insurance costs for the users of their products. This is a feature which is of growing interest to their customers, and has therefore formed an important part of the promotion of their vehicles, on a global scale.

(iii) The Austrian manufacturer of elevators and escalators Schindler, which had historically operated on a rather restricted regional market, decided to make a thrust into global markets. Their major policy shift was to take up international standards throughout their design and manufacturing. By this means they were able to multiply the size and value of their business.

(iv) There can be no industry sector more global than air transport. The builder of the European Airbus aircraft, DASA-Airbus, estimates that the price ratio between customized components and those based on established standards is 15:1. Further, some 50% of component parts are suitable for standardization. By switching to standardized components, the company saves at least 10% on its procurement costs.

A further aspect of the adoption of European standards by Airbus is that they have reduced the number of components necessary to build and maintain the aircraft, so their global support facilities need less storage space, saving an estimated $15 million on this point alone.

The advantages to sales, customer satisfaction, and internal management are clear.

<u>FOR APEC</u>, these messages are powerful, and should provide good material for the promotional efforts which are envisaged. Of course, there is more detail available from source, and there may well be good material available within the APEC countries themselves (I believe that NSBs like ANSI in USA, Standards Australia, JISC, KATS etc. may have useful material to add).

4. WHAT MAKES INFRASTRUCTURE STRONG AND EFFECTIVE?

For the purposes of this report, the two key elements in a national standards infrastructure are the government (to establish the right legislative base) and the National Standards Body (which in the best cases is ambassador, manager and salesman. Not only are the APEC countries very diverse, but there are large variations in the size, and scale of operations of NSBs, which are partly influenced by the size, scale and success of the national economy in which they work. But other factors can be seen to have a profound effect, which I believe it is worth examining.

Four factors seem to me to be key to the NSB's nature and activities:-

- **constitution or status, both legally and financially.**
- **funding, both in terms of scale and origin, and what commercial activities are pursued in order to survive effectively.**
- **what role is played internationally, whatever the motivation?**
- **is there some form of regional structure or collaboration, with the consequent impacts on effectiveness?**

It is evident that the leading NSBs in APEC have been fulfilling their roles in an established and successful way, and some may therefore neither need nor welcome any enquiry. But the smaller, less developed ones would benefit from some clarity on these issues which may well influence their future performance.

4.1 CONSTITUTION / STATUS

Whereas the majority of the European bodies are non-governmental, being established as private or not-for-profit organisations, it is clear that many of the APEC bodies are governmental, in some cases actually being departments of government. This is probably for a number of reasons, including

- the political system under which it has operated, e.g. the FSU states
- the degree of industry interest and involvement,
- whether there has been an element of membership (whether for reasons of individual enthusiasm or self-interest) which has a part to play in the governance of some NSBs, e.g. BSI
- the size of the national economy being insufficient to achieve critical mass except by direct government intervention.

Some of the major NSB organisations in APEC, e.g. ANSI, Standards Australia are quite fiercely separated from government, whereas many others are not really so, e.g. P.R.of China, Korea, Hong Kong and Singapore.

The funding sources are generally in line with the constitutional position. It is significant to note that 50% of the APEC NSBs are 100% government funded, and 60% are more than 75% funded. This is in marked contrast to Europe. Membership subscriptions play only a small part, and for the majority of NSBs none at all. I also believe, incidentally, that the impact on governance by members is small.

The size of the national economy is relevant, and for some it may be difficult to do other than lie with heavy government involvement for the time being. But in all cases it will be important to start to develop strong linkages to the industrial and commercial base of the country (whether agri/rural or manufacturing/urban), and promote the *positive* benefits of standardization to industry. This will be in contrast to any ideas that standards are only concerned with regulatory functions or bureaucracy (which carry a wide perception of being *negative* or unhelpful to industrial or societal stakeholders).

FOR APEC, there is the dilemma of concluding that governmental status does not necessarily bring strength, and could arguably be a barrier to good/improving links to industry/consumers and other stakeholders. But how can small/developing NSBs achieve a strong, relevant, and effective role in the world without heavy government involvement and support? The answer may be that they won't, at least for some years unless helped by some form of regional collaboration. This can at least lead to some collective strength, enhance the scope and relevance of their work, and provide a louder voice in the international arenas of ISO/IEC/CODEX, etc.
I deal with this in Section 6.

4.2 FUNDING

It is instructive to note that the strongest of the European NSBs receive little or no funding from their own respective government (and then it is only targeted at specific contracted items), but they rely on links to industry and society. Arguably this linkage gives rise to better information flows, more relevance in new work, and a better level of participation.

Of course there is a question of cause and effect (or "the chicken and the egg"). The really strong, active and innovative bodies (e.g. BSI, DIN, NEN, AFNOR)are in a position of not desperately needing government funds, and arguably wouldn't want them *if* they were to bring unwelcome constraints or demands with them.

A full debate on the subject of funding may not be very productive for this present exercise, because I suspect that there will be little alternative for some APEC country bodies, in the short term at least, to a considerable degree of government funding. But important alternative market-linked sources could be developed. As examined in 4.1 above, in order for the full benefits of standardization to be realised, better market-linkage is important, and runs in parallel with generating a more robust range long-term range of funding and support.

4.3 PARTICIPATION IN INTERNATIONAL BODIES

Virtually all of the NSBs from the APEC countries are members of relevant international bodies. But this is quite expensive in terms of subscription fees, and the cost of taking an active part in the work. When I was Chair of the Finance Committee of ISO, my colleagues and I were conscious of the burden of membership and participation for developing countries, even though a disproportionate amount of the output was related to their particular interests.

There is an interesting balance to be struck between the advantages and disadvantages of passing work into ISO/IEC, and even in CODEX. Whereas the originator loses his exclusive position, and use or direction of the standard when it is passed into the international processes, on the other hand international adoption increases its currency, and therefore its influence and value. For APEC I recognise that the balance lies in favour of integrating/ adopting international standards wherever practical.

*I am also convinced that it is important for all of the NSBs to maintain these memberships, but I also believe that some form of collaboration amongst at least the smaller bodies could be productive. Even within Europe there are collaborations (maybe informal) to share costs and intelligence from meetings, e.g. by the Scandinavian/Nordic countries and their NSB*s.

4.4 REGIONAL COOPERATION

One of the great lessons of the last 25 years is surely that international cooperation has been effective in achieving progress in international trade issues. Further, the considerable strength that has developed in Europe *as a region* owes much to the regional standards and standardization applications which have been put in place.

In the context of APEC, and the brief for this report, it is clear that development of regional standards has not been pursued. Of course, as I have stated in Section 5, the circumstances in Europe over the relevant period have been rather different, in that the existing NSBs were already reasonably developed, and in some cases were very strong on an international scale, and hence regional development was feasible.

Even if it were to be argued that some of that scenario does actually also apply to APEC, there would need to be a considerable political mood swing towards regional cooperation, and a clear linkage between the political and the technical standards issues, before I sense that it would be useful to return to the issue. The four basic policy items in Section 5.1 would then be essential in the event of this question being reconsidered.

In the context of successful regional collaboration in the shorter term, there are still possibilities of less fundamental cooperation, by NSBs sharing intelligence, representative participation in meetings, shared services, etc.

5.1 INTRODUCTION TO THE EUROPEAN EXPERIENCE

It is useful to reflect that until the late 1970s the European dimension in standardization scarcely existed. Several of the NSBs in the European countries were historically strong, and were well recognised internationally, including particularly BSI from the UK, DIN from Germany (and in Francophile countries AFNOR, and to a lesser extent the Netherlands' NEN).

The European Commission, as the "civil service" of the EEC (as it then was), had the task of bringing to reality the vision of an open internal market within the countries which then made up the EEC., where goods and services could freely circulate and be recognised across borders. IMPORTANT NOTE: Throughout this report I refer to the European Union (EU), but there are also the three countries of the European Free Trade Area (EFTA). These two groupings usually work in concert, share funding (which is predominantly from the EU), etc. References are simplified to the EU and the European Commission, but generally both the EU and EFTA are relevant.

Standards were clearly understood to be key in this process, hence the European Commission became increasingly active in promoting the European dimension in this field. The European standards body Commitee de Normalisation Europeen (CEN) had actually already existed for some years, but in a very low key way; it had a staff of only a handful of people, and an output of European "norms" which was extremely small and of little significance.

But with the enlargement to the community of 12 member states (then including UK), and the new political impetus behind the concept of an open internal market in the Community, CEN/CLC was selected to be the vehicle to handle the new generation of harmonised standards which would be required. CEN/CLC therefore grew rapidly in size in the early 1980s, taking on the new role of coordinating/ managing the development work with great enthusiasm, and it took up a large programme of work. Arguably the programme was much too large for it to be handled effectively, even though almost all of the actual development work was carried out at national level by the member NSBs. It was not until the early 1990s that a useful scale of output began to emerge.

It is important to recognise that the enormous European work programme would have been impossible to contemplate without some essential policies being in place, including the following :-

(i) **The linkage of technical work programmes to political objectives, in that the programmes were related to the industry sectors and subjects which were chosen for harmonisation so as to achieve an open internal market.**

(ii) Building on what already existed.
Some of the NSBs were already strong, and the national networks of NSB/industry/government had operated effectively for a long time. Thus the achievement of rapid progress on such large scale depended on recognising that the existing national

systems could be stimulated to coordinate in a form of "federal" system.

(iii) The "pump priming" funding of some key activities:-

i. 50% funding of the central CEN Management Centre, with
ii. the balance coming largely from the NSB members
iii. contract payments to a few experts or expert organisations
iv. in key sensitive subjects, where progress would be
v. unlikely otherwise.

(iv) Attention to the wider international environment
The international "fall-out" from the strong European activity over the last few years has been some resentment and resistance from other developed areas (particularly the USA) with complaints that over the period mid 1980s to approx. 2002 the preoccupation with European work starved the global programmes (probably true), but I have not heard quite such strong views on health/food issues, e.g. in CODEX.

Also there has been concern that some European standards have been inspired and drafted solely to suit European Directives or regulatory instruments, for economic or protectionist reasons. I believe that there may be some limited justification for these concerns, but not to the extent claimed. Nor do I believe that there was a real alternative to such an aggressive programme in order to shift the whole scene forward, and in the fullness of the global situation I doubt that there has been great harm in it.

FOR APEC the lessons from Europe are there for consideration. I suggest that the four major policy principles above should be viewed as a starting point for progress.

5.2 CREATING A STANDARDS / CERTIFICATION PLATFORM

The European NSBs, via CEN, and with the support of influential member states' governments, agreed with the European Commission that a standards/certification coordination would be necessary in order to achieve orderly and open internal markets. In consequence, a system does exist, even if it is less than satisfactory in the opinion of many.

The challenge has been to translate conformity to a standard (a European standard, e.g.BS.EN.1234) into a publicly recognisable conformity marking. At present there is a multi-facetted system which is not always well understood:-

5.2.1 The mandatory CE mark, which must apply to a wide range of products, to indicate conformity to a particular standard, usually related to health & safety, and often self-assessed and self-declared by the manufacturer. The problem is that the public have come to realise that all products on the European markets will inevitably have this mark (they won't be there otherwise), so it is no indicator of quality in a broader sense.

5.2.2 Whilst there are provisions for partial or full third-party assessment, the problem is that much CE marking is by self-declaration. There are suspicions that all such self-declarations are not reliable, without some form of third-party verification. The massive growth of manufacturing output in some emerging economies (perhaps with less history of reliability) has fuelled these concerns.

5.2.3 Hence in parallel are the pre-existing private or "national" marks, which are *third-party* certified by the mark owner, and offer more reassurance on a wider range of characteristics of quality, and which are still therefore valued by the customer. These marks include those of BSI – the "kite mark", of DIN – the DIN mark, etc. Because these well-established marks are so well recognised and valued within the country of the owner, but not much elsewhere, they have a certain "national" flavour. The European Commission suspect that this can lead to a sort of nationalism in customer preferences – against the spirit of a fully open market across national borders. Hence there is some pressure to move to a European marking – see also 2.2.

The debate on the issue of marking, including the question of whether third –party assessment is valuable, continues in Europe. There are some ideas of eliminating private marks, perhaps in favour of a European one, the Keymark (see section 2.2) but I do not think that the situation will change much in the foreseeable future.

<u>FOR APEC</u> it seems clear that any regional system of standardization must include the vital aspect of conformity assessment/ certification and surveillance, which brings into issue the question of marking, etc. Recognising that regional standards are not envisaged, I am also doubtful that regional marking could sensibly be set up, resourced, publicised, and politically supported, within the resources or time frame envisaged in this report. Therefore collaboration with the existing publicly-recognised marks seems sensible. It could be useful to examine whether more collaborations could be prompted.
Market surveillance seems to essentially be a national activity in which governments are principally involved.

5.3 SELECTIVE FUNDING TO STIMULATE DEVELOPMENT

National governments are largely motivated to provide funding for projects which show measurable benefits for significant national interests. The European Commission realised that the scale of the effort required to establish a complete European system would be colossal, and unlikely to generate sufficient member state support at national level. Rather shrewdly, what was done was to identify key activities which would act as catalysts for further progress, or to overcome specific "bottlenecks", and so obtain highly leveraged effects from the money spent. Two items will illustrate this approach:-

5.3.1 The operations of the CEN Management Centre in Brussels would be a key factor in drawing together the widespread efforts in all the member countries., and in providing a central European "voice" and contact point. The Commission therefore for many years has funded up to 50% of the operating costs, closely linked to progress on the agreed programmes of development work, contracted out to the various national NSBs.

This funding has been in the order of $10 million per annum at busy times.

The proportions of the budget support for the CEN Management Centre in a typical year has been approximately:

European Commission	45%
Member NSBs	50%
Miscellaneous	5%

5.3.2 Because the construction sector is so large, and such a key component in economic success, it was always one of the priorities for the European system. But not only must there be product standards, but also rules as to how structures are designed, and how the products are incorporated in the structures. The majority of such design is carried out by small design offices which would have neither the strength of resources, nor the motivation, to spend the enormous time necessary to contribute to the development of the comprehensive new design codes (standards), and academic resources have been constrained for many years so their support has likewise been very cautious. The solution has been for the European Commission to fund expert contracts (more than 2,000 in all) to draft, harmonise, and refine the new rules – the Eurocodes. These are now, after many years of work, beginning in publication.

This project expenditure has not been evenly spread over the years, but has depended on the progress at the time. Nonetheless the scale of expenditure can be judged by an average annual figure of several million dollars on this project alone.
(NOTE that this project is unique, and clearly this level of expenditure could not be sustained on a wider scale)

The picture has been clear over the last 20 years or so in Europe, that centrally sourced finance has been very effective in directly supporting coordination activities (which would otherwise fall within no individual country's interest), and in pump-priming to generate critical projects and remove the inevitable bottle-necks which occur in key activities or key sectors.

5.4 COMPARISON OF EUROPEAN NSBs

Whilst it is true that almost all of the European NSBs are well established, they are certainly diverse in their nature, size, scale of operations, and funding. It is useful to study these further, because they can offer useful pointers to APEC for the establishment/improvement/coordination of NSBs in this region. A more detailed comparison is made in Section 7.

Whilst there are marked variations across the circumstances of the European NSBs, they have adopted a common set of fundamental roles and activities, which are summarised below. They have also signed up to a Code of Conduct which is intended to maintain harmonious relations between them, whilst recognising that there will be competition for sales, contracts for support work in other parts of the world, etc.

FOR APEC there is merit in having some form of code to establish the proper relationships, and behaviours between the very varied NSBs. The CEN model, whilst simple, could be useful.

5.4.1 THE ROLES AND ACTIVITIES of the European NSBs have been established by custom and practice, and recognised within the regional bodies CEN and CLC. They have their counterpart in APEC, but it could be instructive to understand to what extent each body follows this agenda:-

- Serve public interest as part of national infrastructure
- Manage diverse stakeholder interests: eg industry, government, consumers
- Facilitate formal standards development
- Provide gateway to international / European standardization
- Sales and distribution of standards and related products

Please note that comparisons of the published statistics, or those supplied to the international bodies, is not easy because some of the NSBs include certification and consulting activities which can heavily distort the picture.

For example, BSI in the UK is one of the largest standards/quality organisations in the world, with a total budget of some $500-600 million, and total staff of some 5,500. But within this the British Standards element is approx. 20-25% of the whole group.

The sources of income for BSI are therefore:-

	British standards alone	Within the BSI Group
Standards sales	60%	12%
Membership	20%	4%
Government	9% (targeted activities)	2%
Training/courses	6%	1%+
Miscellaneous	5%	1%+
	Management systems	35%
	Commodity inspection	30%
	Other	15%

For this reason I have quoted data based broadly on the published data, but heavily interpreted by my own judgement and experience.

5.4.3 CONSTITUTION / STATUS

Moving on, in section 4.1 above I examined the constitution/status of an NSB. The conclusion is that experience shows that heavy government control does not generally produce good results. On the other hand, it can be difficult for those other than the larger (and already strong) ones to sustain a very independent life. In the EU *before the recent enlargement,* there were largely semi-autonomous NSBs, with only a couple which were quite strongly tied into government. The new members are generally rather quickly adopting a similar pattern.

At present I would categorise them as follows, but I expect the trend to be strongly towards more independence of activity:-

Rather independent	rather heavy government involvement
Austria, Belgium, Denmark, Finland France, Germany, Hungary, Italy Netherlands, Spain, Sweden, U.K	Cyprus, Czech Republic, Estonia Greece, Eire, Latvia, Lithuania Luxembourg, Malta, Poland, Portugal Slovakia, Slovenia

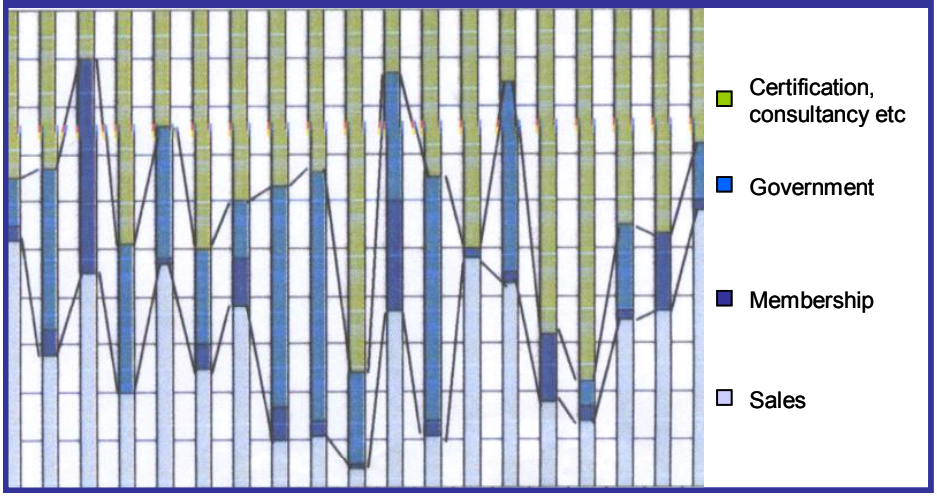
5.4.3 FINANCING

The financing of NSBs in Europe follows a similarly diverse pattern. The data below relates to the 2003/4 situation. The recently joined member bodies have started from a position of total government funding, but are generally steadily moving away from this as their industrial and certification links develop.

It is clear that a more lively approach by some bodies leads to a stronger income from sales of standards and from certification/inspection/consultancy, etc. This fosters closer links to the market, and can therefore lead to more relevant standardization with greater benefits to industry, and less need for government intervention. Equally, the converse can be damaging, in that over-reliance on government support tends to make standards seem too heavily related to regulation, and for them to be seen as impediments to economic improvement in industry, rather than benefits.

I show a graph showing the variation in funding *pre-enlargement*, and this is then tabulated:-

Financing of NSBs in Europe (1)



Financing of European standardization (2)

Great differences in how each NSB is funded

Sales:	**4% - 58%**
Government funding:	**0% - 52%**
Members' contributions:	**0% - 45%**
Testing, training, certification	**10% - 78%**

Importantly, the categorisation of sources of funding can be expressed more simply if it is remembered that most standards sales are to industry, most membership subscriptions are from industry or those who work in it, and most certification and consultancy is paid by industry. Thus in Section 3.1, I summarised the inputs (based also on the CEN study) as being

90%	industry, and industry-led (incl. SMEs)
5%	government (including regulatory, sponsored work, etc.
5%	others (incl. consumers, individuals.

5.5 INCORPORATION OF NEW/JOINING MEMBERS

There have been several enlargements of the EEC (as it was) or the European Union (as it now is). But those that took place pre-2000 did not present much problem to the standards structure because those new members were already quite established and developed. Arguably Portugal and Greece were less so.

BUT the recent great enlargement, which has been dominated by the Former Soviet Union countries, has been very different. Their NSBs have not been well developed, and were only familiar with operating as subsidiaries of the Russian system, concentrating on economic and industrial controls, and having little flexibility to do other than adopt the same Russian standards. There was no history of endeavours to bring advantage to the stakeholders, nor of introducing innovative ideas or products. The European Commission agreed with the member states' governments, and by discussion with the CEN/CLC members, that a programme of assistance should be introduced so as to harmonise the old standards collections with the European ones, to provide training in the CEN/CLC procedures, and to achieve adequate levels of logistical and staff capabilities to survive in a more competitive environment.

The European Union, via the Commission, placed a series of tough hurdles in the way of membership by the new countries:-

(i) The new countries must legally recognise intellectual property rights.
(ii) The NSB must be capable of being a full member of CEN/CLC. In turn, this requires the constitution of the NSB be open/transparent/participative for the stakeholders
(iii) At least 85% of the standards to apply in the country must be the European EN ones.

These membership hurdles have not been easy to overcome, so the European Commission funded important contracts to provide support particularly as the standardization aspects were bound up with broader political objectives. These contracts were usually undertaken by NSBs with experience of providing this sort of assistance, often in partnership with other NSBs.

The work covered:-
*the identification of national standards to be withdrawn and replaced by the relevant European ones,
* training in CEN/CLC procedures, adequate staff resourcing,
* and the provision of suitable equipment and logistical support.
The programme has covered all of the joining NSBs, at a typical cost for each in the order of $½ to 1 ½ million. The work was largely undertaken by one or more of a small group of NSBs , often in a partnership of two, particularly from the "big 6". Each contract took typically some 6 months to complete.
There is a resonance between the accession of new member countries into the EU, and their NSBs into CEN/CLC, with the accession of more countries to the WTO. In the former case the opportunity has been successfully taken to generate change and development in the standards community. It seems that even more might be done to leverage the accessions to the WTO to similar effect.

FOR APEC :- European funds have been available for such assistance projects. CEN manages several regional and national Technical Assistance programmes financed by the EU. The objective of these programmes is very much in line with this ABAC exercise, namely to facilitate trade through a system of mutually recognised bodies and procedures. The assistance is aimed at building a quality infrastructure in the beneficiary countries, and currently programmes are in Asia (ASEAN), in the Mediterranean countries (MEDA), as well as Turkey and Malta. NOTE If this is thought to be of interest, I could effect an approach, at least on an exploratory basis.

Not only are there several useful pointers in the process adopted to bring the smaller/less standards-experienced countries up to a state where they can make a full contribution to regional activities, but as I discuss later I believe that some form of cooperation between smaller bodies, even as far as a federal concept, may be the way to make progress without incurring very large costs.

5.6 VITAL OBLIGATIONS ON MEMBER STATES / NSBs

There is no doubt that the European experience over the last 25 years has been a success, but it is instructive to compare this with the corresponding history in the global bodies ISO and IEC, where there remains some ambivalence. Why is this?

One of the principal reasons must be the strong obligations that are undertaken by the participants in CEN/CLC, as compared to those in ISO/IEC. These obligations cover governmental and NSB actions. The ones that seem to me to be crucial are:-

(i) there is a requirement that the NSBs of all the countries are suitable to be members of CEN/CLC (as I explained in 5.5 above). This has an impact on the nature of the standards body and its approach in each country, and ensures that sensible dialogue can take place.

(ii) When a European standard is published, *every member body must adopt it within a normal time of 6 months*

(iii) at the same time as adopting a new European standard, *ALL conflicting existing national standards MUST be withdrawn*. This generally means that the national collection is progressively withdrawn, and the new take over.

The importance of these obligations in Europe is great. They contrast with the relaxed, and often rather ambivalent, attitude to ISO/IEC standards in the rest of the world, where there is no strict obligation to either adopt them, or withdraw national ones in their favour. Consequently all the member states and the respective NSBs take the work in CEN/CLC very seriously. Whilst the dues paid to the international bodies are of the same order of magnitude as those in Europe, over recent years there has been much more effort put into the regional activities as these are so meaningful.

<u>FOR APEC</u> there are obvious parallels for the achievement of progress. By some form of obligation (along the lines of those for members of CEN/CLC) I suggest that it could be a way of capturing attention to and by the stakeholders, particularly in the critical places which most exercise ABAC.
Of course, the situation of the member bodies in APEC is extremely varied, from large, developed and self-confident ones, to the very small government-linked ones, so any uniform solution might be difficult.

5.7 SUMMARY OF USEFUL LESSONS FROM THE E.U.

In terms of a way forward for strengthening the APEC standardizing family, there are many useful lessons to be learned from the European experience. History probably cannot be repeated very closely, because there are some important differences in circumstances which would influence the choice of policies. Nonetheless, many successful ideas can be adopted, and the resulting APEC experience could be faster if the political and organisational will exists, and if the necessary actions are taken.

The diversity of the APEC countries, and equally their NSBs, means that some form of collaborative structure, and policies of mutual recognition of standards and certification, are essential.

There is an universal challenge of raising the profile of standardization, and spreading appreciation of the benefits to all players derived from the operation of an effective standards/certification/surveillance regime. Even with the evident successes of the European developments in this field over the past 20 years, there remains the challenge of achieving adequate recognition and support; Europe has found no simple answer to this. I have suggested some lines of approach for this problem, but it will require sustained effort everywhere to move forward.

In the areas which I have studied, I have proposed ways in which APEC can profit from the experience of the last few years, and they are incorporated into the set of proposals in Section 8, under the headings:-

- *political*
- *constitutional status of the NSB*
- *pump-priming finance*
- *standards/certification/surveillance system*
- *funding of coordination work*
- *avoidance of excessive proportion of government funding/control*
- *ongoing funded "induction" process for smaller, less-developed countries*
- *obligations to respect the system and common adoption policy*

6. THE APEC SITUATION

In order to draw useful comparisons between the APEC and European situations, it is necessary to realistically assess the present situation, based on both factual data and on experience and judgement. The infrastructures in the APEC countries are diverse, with widely varying levels of development. For this reason the way forward may require distinction between those further, or less far, along this course. The prioritisation which I propose in 1.3 will permit sensible focussing of effort to where it will be most effective and implementable in the timescale available.

Because the NSBs are so often the focus (and channel) for national work, I deal with these as the best indicators. The best source of comparative data on them is the ISO annual Members listing (and its IEC counterpart). As part of the preparation for this exercise, Standards Australia tabulated some of the basic features of the NSBs in both regions. As I have explained in 5 above, these statistical comparisons must be treated with great caution, because of the differing structures of the various bodies, and the range of services which they cover in their business activities, within the data.

It is also worth commenting on the use of the description “standards development organizations” (SDO) in the ISO data in Annex A.4. In fact there are many standards developers, ranging from governments, industrial companies, trade associations, and so on. For example in USA, the NSB is ANSI which accredits hundreds of SDOs which feed into its processes. Their output can be in the form of rules, codes of conduct, internal company standards (for technical or behavioural matters), etc. The catalyst, at this stage at least, for the ABAC study is the National Standards Bodies (NSBs) themselves in the various countries, responsible mainly for the more formal, publicly available standards. Whilst I therefore principally deal with the NSBs in this report, the other forms of SDO can play an important role.

What is clear is that there is great diversity in both regions, with the range of scale of national economies (and corresponding activities of the respective NSBs) being even greater in APEC than in the EU. I have examined some of the key features, which may influence the feasibility of some of the initiatives to flow from the current ABAC work, and the comparisons are presented in Section 7.

6.1 THE CURRENT SITUATION IN APEC

The real challenge is to grasp the enormous variations across the region. National economies, political attitudes and the nature and strength of the respective NSBs, make up the context of the infrastructure.In examining options as to the potential ways of strengthening the APEC arrangements, solutions which might suit some would be quite unsuitable for others, thus different levels of action will apply to different countries.

The nature of the national economies ranges from predominantly trading, to manufacturing, agricultural and some with quite a high services content. I believe that there will be no single solution for the years ahead.

I have examined those characteristics which I believe are the keys to determining how to move forward:- Constitution/status, Size, Activities, and Funding.

NOTE I repeat the cautionary note which I made in Section 5, that the data available from annual statistical returns (usually to international bodies) is notoriously difficult to interpret. Much of the data relates also to testing, certification, surveillance, or other ancillary activities. For example, I analysed BSI in UK and globally, in section 5, and similarly a degree of interpretation is necessary in the APEC data, e.g. SAC in the PRC (with 28,000 staff, but dispersed geographically and work-wise ?).

6.1.1 CONSTITUTION

heavy govt. involvement	rather independent
70% of member bodies	30% of member bodies (some private/ some mixed)

6.1.2 SIZE

By financial turnover	from $1/4million to $70million
By internal staff	from 15 to 1,000
By outsourced or delegated staff	from insignificant to 600 (28,000 in SAC, China is not fully understood)

6.1.3 ACTIVITIES

Principally standards/metrology/training	60%
Also cover certification, etc.	40%
Standards collections - total	1,000 to 23,000
proportion of international	generally high
voluntary	generally very high
mandatory	up to 40% (partly reflecting some "command" economies)
Participation in international activities	from very high to very low (difficult for the many small NSBs)
Certification/surveillance	very little involvement (therefore largely left to private certifiers, or government)

6.1.4 FUNDING

By governments	generally HIGH, with many at 100%
By industry	generally LOW, with many at 0%
By sales	generally LOW, with many at 0%

6.2 OBSERVATIONS ON APEC National Standards Bodies

As stated previously, there is wide diversity between the extremes of the characteristics of the NSBs. This seems to arise from the sizes of the national economies, the nature of the political and societal backgrounds in the countries (which are remarkably different), and of course from the present arrangements of the bodies themselves. APEC certainly has entrepreneurial economies, but this is not always reflected in the respective NSB. But it seems to me that the majority lie towards that end of the spectrum with heavier government involvement and funding, with emphasis on regulatory/control functions rather than providing positive assistance to business being the principal driver.

This is in contrast to Europe, where there is a considerable market linkage, as will be examined in Section 7.

There is another feature (which applies to much of the world) of being very dependent on international standards, which form the great majority of most of the national collections. (There are some exceptions where nationally conceived and developed standards have an important role, with obvious examples including ANSI (and its cohort of industrial SDOs behind it), JISC with its strong industrial context, and Standards Australia with a history of innovative standards). But with a range of narrower bodies in APEC it is fully understandable to hold to the policy of following international standards. As there is no significant regional development activity (in comparison with Europe, where it is an enormous component), I do not believe it would be feasible or necessary for APEC to revisit this in the medium term, for political, financial, and practical reasons.

FOR APEC I conclude that in order to develop a more market-focussed and business-oriented standardization system it will be necessary to look at the constitutional set-up of many of the NSBs, encourage more market-linked activities and funding support, and encourage collaborative ventures between the NSBs. This should improve the range and reach of the work, with great benefits to the stakeholders.

7. COMPARISON OF THE EUROPEAN AND APEC ARRANGEMENTS

A study of the data for all the NSBs in the two regions reveals a great diversity within both, but also some consistent patterns of those differences. By examining the key features, it is possible to identify the different history and context which applies in Europe (with generally strong, well established and partially aligned NSBs), with that in APEC (with a few strong NSBs, and many which are not really so), and much less discernable consistency of approach, and no real alignment for the region.

Of course, the merits and extent of developing a more consistent or harmonised approach need to be quite widely appreciated. And it is surely true that to shift the region's governments' policies in the direction of harmonised standards, there must be the capability to operate a standards/certification/surveillance system, and the NSBs must be in the same line. A harmonised approach to international standards, mutual recognition of standards and certification/surveillance based on them, etc. is essential. If the NSBs themselves are not well advanced in this respect, or worse they have no plans to move in this direction, the prospects would seem daunting. Hence the subjects addressed in this report seem relevant and timely, and the accessions to the WTO could now act as a strong catalyst for these developments, much as the recent members of the EU have used their accession to achieve great strides in their standards infrastructures.

I am concerned that in the largest economies in the region the infrastructures are well established and strong, and, importantly, sufficiently self-determining or inflexible, that shifting their policies or strategies would probably be rather difficult and time/resource consuming, and arguably unnecessary. It could be more useful to concentrate on the smaller, maybe more flexible (?), in the shorter-term, whilst having the whole picture in mind for the longer term.

I believe that the critical issues for comparison, and hence identifying useful initiatives, are the following:-

- Constitution/status
- size, scope
- activities
- funding sources.

I therefore deal with each of these.

(I repeat my note from Sections 5 and 6, that the data can only be interpreted from annual statistical returns (particularly to ISO/IEC), which my experience tells me are not very reliable. Also there are complications with interpreting the data because of the very varied activities of the bodies, and how they reflect these in the statistics.

I have particularly quoted BSI in UK in Section 5, and SAC in the PRC in Section 6. Therefore a degree of interpretation and judgement has been applied, based on my experience.)

7.1 CONSTITUTION

in Europe		in APEC	
45%	governmental	70%	governmental
50%	private	15%	private
5%	mixed	15%	mixed

"Governmental" covers those which are directly departments, or those which are heavily government dominated. "Private" covers those which operate as quasi-independent bodies, even though with obvious public responsibilities.

There are clear differences in constitutions and attitudes between the two regions, and I believe that this is reflected in different approaches and attitudes. I strongly sense that there is a more entrepreneurial spirit in Europe, which probably has some of its origins in the different constitution/status. In the competitive world of the 21st. century there must be encouragement of innovation.

7.2 SIZE / SCOPE

	in Europe	in APEC
Annual turnover	$ ½ to 150 million	$ ¼ to 70 million
Staff (internal & outplaced)	7 to 750	13 to 900
No. in standards collection	5,000 to 28,000	1,000- to 23,000

It is difficult to be precise in these matters, but I am clear that a picture emerges of a reasonable level of activity in both regions, but greater value being generated in Europe. This is a result of the more entrepreneurial approach, commercial awareness and market linkage in European NSBs generally. There is also the issue of "critical mass", where the larger bodies are able to generate and sustain more, and more profitable, activities. Hence my comments on collaborative ventures.

7.3 ACTIVITIES

In both regions some of the national bodies have significant activities in the fields of management systems assessments, or testing/certification. The range and diversity of these applications makes it rather meaningless to analyse this aspect in depth. Suffice to say that a greater degree of market linkage is generally beneficial.

7.4 FUNDING

	In Europe	in APEC
By government	0% to 100% (largely at the LOW end)	0% to 100% (largely at the HIGH end)
By industry	0% to 60% + (largely at the HIGH end)	0% to 50% (largely at the LOW end)
By sales of Standards	0% to 50% + (predominantly@ HIGH end)	0% to 50% (predominantly@ LOW end)

The picture which emerges is of considerable variations, but with a much more "commercial" approach in Europe, both leading to, and reflecting, closer links to the market. This must be a worthy objective, bringing value-adding for the stakeholders to the top of the agenda.
The consequences of closer alignment to WTO could drive progress in many respects, and it should therefore be a strong influence on the initiatives.

FOR APEC the indications can be interpreted quite clearly:-

- *Government involvement may seem to be an easy way to make progress, but experience shows that there is more chance of market relevance and financial success if government involvement in the direction and operations of the NSB is less of a priority than market linkage and relevance, which bring vitality.*
- *There are obvious benefits from scale of operations. Not only can a greater range of activities be covered and more market sectors satisfied, but there is also a critical mass which gives more exposure and influence internationally, whilst gaining efficiencies in the operations. Regional collaborations can help.*
- *Accessions to the WTO can be timely influences, giving opportunities for the sort of leverage seen in Europe.*

The constitutional issues may only be tackled by governments, but the strengthening and enlargement of the bodies may be assisted by collaboration initiatives and regional collaborative ventures. Where effective trade or business bodies don't exist, the sort of initiatives I have suggested in 2.3 can be initiated with individual companies or organisations, and this in itself can help to drive cooperation in the various sectors of the economy.

ANNEX (Annexures to be circulated separately)

A.1.1 Extract from the UK's National Standardization Strategic Framework, summarising the major challenges, key areas, strategic directions and implementation. *Many of these apply in most countries, and are therefore relevant to the APEC countries.*

A.2.1-4 Extract from the CEN study of "Future Funding of European Standardization", *which indicates trends which can be anticipated in APEC.*

This has been extensively quoted in the text of this report. The 4 diagrams included here show a summary of current industry support, the source of recent funding of the CEN Management Centre in Brussels, and 2 diagrams showing future trends for the NSBs and industry support.
A.2.1 shows European industry support for regional/international standards.
A.2.2 NSBs must be more active in generating a variety of funding sources.
A.2.3 the leading European NSBs have supported CEN increasingly.
A.2.4 industry predominantly drives standardization.

A.3.1-6 Extracts from DIN/Beuth study on "Economic Benefits of Standardization".

These extracts are principally from the text of the conclusions, and briefly summarise the most relevant for this ABAC study. *These should be an important part of a campaign to increase awareness.*

A.4.1-4 Statistics on the National Standards Bodies of the EU and of APEC, taken from ISO yearbooks by Standards Australia. In this report I warn that this data should not be taken prima-facie, but interpreted and adjusted by knowledge and experience. *Comparisons are covered in Section 7.*

A.5.1 Some acronyms in common use in the field of standards.

A.6.1-2 A brief C/V of David Lazenby, the author of this report.

GLOSSARY OF ACRNYMS IN STANDARDIZATION

NSB **National Standards Body**
The formally recognised body for standards development work in the country.

SDO **Standards Development Organisation**
Any organisation (from any stakeholder) which develops some sort of standard

ISO **International Standards Organisation**
The global body, of which almost all NSBs are members.

IEC **International Electrotechnical Commission**
The sectoral equivalent of ISO.

CEN **Committee de Normalisation European**
The regional equivalent of ISO.

CENELEC **(or clc)**
The electrotechnical equivalent of CEN.

--EN---- **European Norm**
A harmonised European standard, which is only available from one of the NSB members of CEN/CLC eg. BS EN 1234