# 3rd Session

## The Role of Environmental Management Accounting in the Asia-Pacific Region

## 3rd Session

**Chairman**

From now, we will start the third discussion under the theme of " Role of environmental management accounting in Asia Pacific countries ".

In this session, Professor Katsuhiko Kokubu will act as a chairman.

Then, I leave it to Mr. Kokubu, please.

**Kokubu**

Thank you very much for your introduction.

Today, six reports were presented, including my presentation. In this panel discussion, each of commentators gives comments in response to two presentations.

Martin Benett comments in response to the first presentations by Kokubu & Nashioka and Dr. Lee, Tomoko Kurasaka to the next presentations by Mr. Burrit and Reyes & Mayol, and Dr. Kim to the last presentations by Ms. Bratasida and Mr. Imai. Ms. Kurasaka and Dr. Kim attend the workshop from this panel discussion. As described in detail herein, Ms. Kurasaka is a leading expert in Japan on environmental accounting and environmental information disclosure as a certificated public accountant and a representative of NGO. Dr. Kim, an associate professor of business school of The Chungbuk National University, has specialized in the study of accounting and environmental accounting and engaged in various projects in Korea as a foremost expert on environmental accounting.

In today s discussion, Mr. Benett, Ms. Kuraska and Dr. Kim, in this order, give comments in response to two presentations, respectively. After that, presenters answer questions from these commentators and then we discuss various issues freely.

Because of casting, I have to answer questions while acting as a chairman. So, I asked Dr. Miyazaki hurriedly to act as a co-chairman. We together will proceed with this program. I would be grateful for everyone s supports.

Firstly, Mr. Benett, please make statement.

**Bennett**

I am responding to the papers presented this morning by Professor Kokubu and Dr. Lee respectively, and would like to offer some comments and thoughts that they prompt. They reflect two projects into which a lot of work has clearly been input, and have encouraged me to do some hard thinking about what we mean by " environmental accounting ".

I have watched with interest and admiration just how comprehensively and quickly the guidelines in Japan on reporting and cost accounting have been developed, and I have been also

very impressed by the speed with which these have been widely taken up by Japanese companies. This is clearly the sort of direction in which Korea is now also looking to develop as well.

The papers both focus on an approach which involves the continuous measurement and reporting of environmental costs, and ways in which these can be identified, defined, captured and to some degree analysed. The Japanese situation as reported in Kokubu s paper is more well-developed than the Korean system which is reflected in the three cases reported in Lee s paper, but both share several characteristics. In both cases the core is some analysis of the total amounts of environmental costs incurred by a company, with a lead given by government to industry by providing guidelines to support and encourage companies in what they are doing. They both focus on internal costs, which is more realistic and pragmatic than attempting to include any measures of external costs.

Within this broadly similar framework, the two papers differ in their subject matter. Kokubu s paper reports on a survey of the adoption by Japanese companies of the present guidelines and the effect that these are having, whereas Dr. Lee s paper looks at three case studies in Korean companies that might offer some indications of how a standardised approach can be developed that could be promoted through government guidelines.

This is one direction in which an overall system of environmental management accounting (EMA) could be developed; or perhaps more correctly, in which a situation can be achieved in which EMA is a tool that companies will consider as one of their main techniques in their overall tool kits of environmental management methods. It can perhaps be characterised as an essentially supply-driven approach - to start with the accounting data, and then to consider how this may be processed in order to support environmental management - and in these papers this is explicated in considerable detail. However this is not the only position from which one could seek to develop a system of EMA. An alternative and complementary approach might be to start instead with the purposes for which the information is to be used: who the expected users are within the management of the companies which adopt EMA, and what judgements and decisions they have to face as part of their managerial responsibilities in which their responses might be improved if supported by EMA information.

This then raises further questions about how most appropriately to design detailed guidance on preparing the information. There are no authoritative definitions of what is and is not EMA, and it is apparent that the term may be used by different people in different ways. However the usual consensus is that EMA information is firstly accounting-type information, and secondly that it is information which is directed towards management within organizations in order to help support them in the various activities that are the responsibility of management. These management responsibilities can be loosely categorised under the two broad headings of

decision support and control. Decisions may be either long-term or short-term; control, in which I would include the prior process of monitoring an organisation in order to identify where control is needed, can itself then lead to subsequent decisions, for example on how individual managers are rewarded or penalised.

It also raises the question of what we should accept as accounting information. Is this purely information which is monetary form, or does it include also physical information? And if physical information is included, then is its primary purpose to support the monetary information by providing it with some underpinning in operational data, or other purposes too? Roger Burritt this morning described his approach in which both MEMA and PEMA are included, both being parts of a coherent whole. This view clearly enjoys a consensus of opinion in its favour here, but it does raise some questions. Firstly, why may accounting be helpful in this process in the first place? And secondly, following from this, what is the scope of what we choose to consider to be accounting, and what are the particular competences that accountants possess that can help to support this?

Monetary information has clearly always been in the ownership of accountants, and it is this which defines accountants 'jobs and the accountancy profession. This is not necessarily the case for physical information, whether environmental or otherwise. There are several other disciplines and functions in business with their own histories of measurement and information generation that will also lay claim to physical performance measurement, so this raises questions particularly for those of us in the accounting profession about just what our profession is, what our distinctive competences are, and what it is that may give us a distinctive and competitive advantage.

The premises here are then firstly that environment matters, which we must take as a given here; and secondly that accounting can potentially help, both generally and in environmental management. The second premise needs to be supported in each case, since organisations differ in the extent to which they manage themselves by reference to accounting measures and financial methods; and if these were not present and used, this does not necessarily mean that the task of management will not be achieved since this might then instead be based on other approaches to management, perhaps people-based approaches rather than anything involving quantitative analysis. We might argue that this task might not be achieved so well in the absence of accounting measures and financial methods, but it is up to us to prove that what we can offer will in fact bring some added value.

My concern is not directly about these papers or the projects on which they report, but about how environmental management accounting is to develop. Firstly, what will the information be used for and by whom; what sort of decisions is it going to be relevant for; how will it help to improve these decisions or to support management control; and what value is added by having

the information in monetary form and the involvement of accountants and specific accounting competences. Following from that, perhaps rather more detailed guidance is needed on how to define and measure costs. I can anticipate that there could be several problems raised in practice in applying these guidelines over which heading to allocate some costs to, over how to decide whether a particular cost is in fact an environmental cost or not, and over what the significance is of the definition of a cost as " an environmental cost " in the first place. Does this imply, for example, that it will be managed differently than a non-environmental cost would be, or that it will have a different significance for particular stakeholders?

This then inevitably leads to the question of how the information which is generated is to be used, and what is the purpose of reporting a total amount of environmental cost. To put this most simply, at the extreme - is a high level of reported environmental costs an indication that a company is committed to the environment, on the grounds that high levels of spending are a symptom that they are prepared to invest in good environmental management, either to improve future business performance or as a direct indicator of their corporate responsibility generally? Or are environmental costs like any other costs, i.e. negative items in the income statement and therefore to be minimized? Clearly, the most basic requirement in calculating and reporting any quantitative information is to know whether an increase represents a positive or a negative indicator - unless there is clarity over this, the value of the information in the first place must be dubious.

So how can we build on the work that has been done to date, since we now have these tools and a lot of work has clearly gone into the supply side of setting up systems to generate the information? What would be helpful is some research into the potential users of this information, since in the end accounting is like any other activity - it is justified by the value of the activity to its own customers. Accounting produces an intangible product, the information generated by the accounting process, whose value is wholly defined by the extent to which it helps to inform decisions and judgements. An analogy can be made with the process of producing any tangible product, such as in automobile manufacturing. If a car manufacturer found that it was having little success in selling its cars, one reaction might be to look at the product and the manufacturing processes. However total quality management principles suggest that the first response should instead be to go back to the market and to ask customers what they want, and why they are not buying the manufacturer s vehicles. Are they instead buying another manufacturer s products, or perhaps even managing without automobiles altogether? This would mean going even deeper, to research into not only what customers are saying currently about their preferences but into what they might really need - what they might use the manufacturer s vehicles for, in what ways these could help to support their lifestyles and their working patterns, and indeed what their lifestyles and working patterns could otherwise become.

The analogy of this with EMA is that perhaps we should firstly aim to investigate how the people to whom we are directing this information towards are likely to be able to usefully use it, whether this is within the organization or by external stakeholders. Professor Kokubu was very explicit that external stakeholders are the immediate first audience for the information that the Japanese system produces, which prompts the question of which external stakeholders, and what decisions and judgements they need to make. Is it financial stakeholders and investors, to help them to make decisions on to whether or not to invest in the company? Is it the public generally? Or perhaps NGO groups, to help to form the attitudes that they may take towards the company? Unless there is some clear link between the information that is being produced and the consequent logical action, then it is not clear how the information can add any value to this process, so this needs to be made explicit. What are information-users doing at the moment, in the absence of this information? Are they, for example, making their decisions on the basis of some other form of approach? This is not intended as a criticism in any way of what has been done here but as an alternative orientation, and we need to approach this from both directions. We have here two very thorough and well-worked papers on the supply side, with systems of generating information, but I would suggest that these need also to be linked with a user focus.

Apart from this fundamental perspective, there are also several other aspects of interest in the papers that are worth pursuing. The complementary and mutually reinforcing external and internal focuses in the Japanese system were interesting, as was the creativity of allowing for different qualities of information - both information on a "credible basis", and "hypothetical calculations" as a short-term measure, as a way of encouraging measurement activity without having to postpone outputs until a full system can be developed, which could be over-perfectionist. The rate of implementation by companies in Japan with these guidelines in a very short time was impressive, and this would in itself justify further study into the relative balance of motivations on companies as between government pressure, peer group pressure from wanting to keep up with other companies, perhaps some concern for corporate reputation and public relations, and the actual experience in dealing with external stakeholders. Have any external stakeholders such as investors actually informed the companies or researchers that they have found the information to be useful? Similarly, the value for internal management within the companies - is this information actually informing decisions, meaning that those decisions when made are different than they might otherwise have been?

Three points in Dr. Lee's paper were of particular interest. The first was the link with activity-based costing as a way to integrate environmental accounting with other innovations in accounting that may be more established in companies. One concept which could help to define what is considered to be an "environmental cost" could be that these are the costs for environmental factors are the main cost driver, so that environmental expertise is therefore the

key competence in identifying those cost drivers and also in managing the costs in order to minimise them.

The second is the very important practical point that EMA should be linked to other developments in internal information and data collection systems, with the paper's mention of ERP. One notable feature of the presentations and discussions in both this workshop and the International Symposium yesterday has been that these have attracted only limited interest here, in contrast to the experience in EMAN-Europe where ERP (enterprise resource planning) systems and information systems have tended to attract substantial attention. This does not mean that either balance is more or less appropriate than the other, but there is clearly a difference as between the two EMAN regions which is itself of interest; and it is in any case important to consider information systems and how these can be designed and managed as cost effectively as possible.

The third point of interest from the paper and its reports on the three companies, though perhaps a rather discouraging one, was the responses that the companies made when questioned how the information that is already being produced is being used in practice by management. The finding of the paper is that the companies' managements were not in practice using this information. This then raises the question of whether this is just a matter of changing the details of the information set, or of doing something more fundamental. One factor here is that the

EMA information is being produced mainly by the companies' environmental departments rather than by their accountants, which again raises the question of how to make EMA more relevant to the mainstream of the company. In my own experience in the UK, management accountants to whom this question has been put have usually replied that their work is primarily determined by what senior management requires of them. and that this already fully occupies their time; however, if and when EMA information can be positioned as an essential factor to support the company and its senior management, they would then be able to fulfill that need. However the onus is on those of us who are working to develop EMA to make that case. Thank you.

**Miyazaki**

Thank you for your comment, Mr. Bennett.

Next, please give comments, Ms. Kurasaka.

**Kurasaka**

First, I would like to discuss the presentation given by Roger Burritt. As Martin Bennett mentioned, Roger presented a very interesting framework which categorizes Environmental Management Accounting into monetary and physical EMA on one axis ("MEMA" and "PEMA").

Differences between MEMA and PEMA scenarios may be readily apparent, but the distinguishing characteristics of Past-oriented and Future-oriented EMA are open to a number of interpretations as Mr. Nakajima pointed out this morning.

One possible way of clarifying these relationships is to focus upon purpose. Accordingly, Past-oriented EMA is used to analyze and develop understanding of the past, while Future-oriented EMA is to be applied when making decisions concerning the future. However, Roger explained that Past-oriented EMA[J1] could also be used for future decision-making. Thus, it seems necessary to focus on the kinds of information involved.

To reiterate, Future-oriented EMA incorporates a degree of predictive information of future projections, while Past-oriented EMA is not concerned with such information, being restricted to past information. Then the latter can be used for future decision-making by collecting and analyzing the past data.

In relation to past vs. future,"present", as asked by Mr. Nakajima, seems to be included in the analysis of Past-oriented EMA, since in another moment, "present" will become "past". That is, next moment it becomes concrete information with no uncertainty any more. Therefore, we may understand Past-oriented EMA would include concrete information with no uncertainty and Future-oriented EMA would analyze the other information that is predictive and uncertain to some extent.

Keeping this in mind, I would like to make a brief comparison between Japan and Australia, referring to Figure 6, which shows major EMA projects in Australia.

First, as shown in Figure 6, there are many examples of Past-oriented PEMA, especially in the cell of short-term-focus, and Japan also has numerous projects in the same cell. Though Roger little explained, Australia has PER (Public Environmental Reporting) program (c). This is placed at the top of this column since not monetary information but physical information alone should be disclosed in Australian PER. Japan has a corresponding reporting system that will appear in both PEMA and MEMA areas, as many Japanese companies disclose monetary EA (environmental accounting) information in their Corporate Environmental Reports as reported this morning. In this respect, Japan is relatively advanced in terms of the integration of MEMA and PEMA.

On the other hand, Japan has no equivalent to the Australian Mandatory Disclosure system (as e shown below c), which clearly specifies regulations concerning the disclosure of financial details with respect to environmental matters. This is located in PEMA area alone in Australia though in the US and some other countries this practice is placed in MEMA area as well because disclosure laws require that monetary information of cost for compliance with the regulations should be listed if it is important relating to a company's financial condition and management performance. Japan, on the other hand, has no relevant financial disclosure regulations which

specify as environment related in either MEMA or PEMA category. So in Japan it is necessary to investigate this issue in the future.

" AASB1037 " located in both PEMA and MEMA areas as (i) at the bottom of this column is accounting standard which gives monetary evaluation on various species or biodiversity as explained by Roger. Australia is relatively advanced in this point as it has never been discussed in Japan.

As for Future-oriented EMA, Japan is engaged in only a few projects at present same as in Australia and has just started recognizing the necessity of timely development of Future-oriented EMA tools. For example, tools currently developed by Study Group of Environmental Accounting of METI (Ministry of Economy, Trade and Industry) include Future-oriented EMA tools and it is expected to promote further development in near future.

Now I would like to talk about the forth presentation on " EMA in the Philippines ". We learned from Ms. Rayes's presentation that PICPA has 100,000 members against its population of 60 million around, whereas JICPA (Japanese Institute of Certified Public Accountants) has only around 15,000 members against Japan's 120 million people. That is, as population of the Philippines is half of Japan, the number of members of the certified public accountants in the Philippines represents 6 to 7 times as in Japan. The work of PICPA members is not simply confined to financial auditing as JICPA members but extended into various industrial sectors, where their activities include a wide range of corporate accounting and financial operations. With this in mind, we can truly appreciate her efforts to educate PICPA members and others in matters of environmental accounting (EA).

Particularly admirable is her successful integration of EA into university accountancy curricula.

One of the reasons why EA has deeply permeated through accountants in the Philippines may be EA activities by PICPA members have an underlying focus on so-called" win-win "investment opportunities which is developed by the USEPA (United States Environmental Protection Agency), where economic as well as environmental merits can be reconciled by seeking to limit pollution.

There seem to be rooms to promote environmental activities to catch an opportunity of such " win-win " paradigm in Japan. On the other hand, as this paradigm is just a part of the whole environmental activities from which you can not expect any economic benefit in short term, companies should make efforts on environmental accounting considering other various conditions under the strong commitment of its leader. In order to make further progress, fresh tools and necessary education based on effective methodologies must be developed that will go beyond the " win-win "paradigm in Japan and in the Philippines as well .

**Miyazaki**

Thank you for your comment, Ms. Kurasaka.

Next, Dr. Kim, please make comments on the following two presentations, " Introducing EMA to the Indonesian Industries through Effluent Charge " by Ms. Bratasida and " Case Study of Japanese Companies ' Environmental Accounting in Asia " by Mr. Imai.

**Kim**

First of all, I would like to thank all the ladies and gentlemen of IGES and Kansai Research Center for inviting me here to the beautiful city of Kobe and giving me an opportunity to give comments to the wonderful presentations by Ms. Bratasida and Mr. Imai.

Before I begin my comments, I would like to discuss and clarify a couple of terms to avoid confusion. They are internal vs external costs and internal vs external environmental accounting. I used to have no problem with understanding the meaning of the terms and their relationship with management vs financial accounting. But, I became a little confused after I realized that those terms were used a little differently in Japan than elsewhere. Thus, I have to address this issue to understand the terms exactly myself. As I understand, the management accounting is accounting for the internal use, and it reports to the managers for management decision-making regardless of the types of information.. The financial accounting is an accounting system to convey the information - whatever the information is - to the outside stakeholders.

So in that sense, I was a little confused when Prof. Kokubu and Mr. Imai mentioned external management environmental accounting. So, why don t we just use financial vs. management accounting, where financial accounting deals with providing information to the external information users, and management accounting deals with providing information to the internal users. It is an easier way to understand the management and the financial accounting. No matter what the information is, if you use it for internal purposes, you can call it the management accounting. And, if you try to convey information to outside (external) stakeholders, you can call it a financial accounting. That is how I understand the terms internal vs external and management vs financial accounting. So please correct me if I am wrong.

In the presentation by Mr. Imai, I understand that external costs are the social costs, which are not borne by the responsible private corporation (i.e., Matsushita). So, my question to Mr. Imai is, did you or didn t you incorporate the externalities in calculating the environmental costs of Matsushita? Please elaborate a little more on it later.

In conventional accounting area, as you know very well, management and financial accounting tend to be integrated. It is especially true when companies combine accounting systems to the integrated management information system, such as ERP. In the long run, as the environmental accounting system progresses, environmental information for management

decision-making purpose or external reporting purpose has to be produced by one integrated system.

Thus, when we prepare guidelines or some other types of environmental accounting tools and decision-making models, it is crucial to make environmental cost information produced for both purposes. In this context, I would like to raise a couple of issues for discussion. First one is regarding the depreciation expense. In the current Japanese guideline, depreciation expenses are not reported, if I understand it correctly. Instead, investments and operating costs are to be reported separately. My opinion is that depreciation expense serves as a link between investment and expenses. So the depreciation expense needs to be reported in the environmental cost report.

Secondly, what is the basis you use in segregating the environmental costs from non-environmental costs in Matsushita? In practice, it is not an easy task, and I understand that your industry does not have industry-specific guidelines for the purpose. Would you please share with us your experience on what kind of difficulties you faced in segregating the environmental costs.

Third, you did not provide us with the information of what portion of the total manufacturing costs environmental costs took. If we wanted the information for cost control purposes, we first have to know the figure and start from there. Thus, would you be willing to disclose the figure to us? In addition, environmental costs of 62 Billion yen in total are huge amount. I am wondering what implication and what message does the number give to the management of the Matsushita?

Another point is that in computing environmental costs, basically all efforts and costs are accounted for one period only, even though their effects continue to accrue in the years to come. So, how did you handle this problem of computing and grasping the costs and benefits? The economic benefits according to your report are around 7.6 Billion yen ? But, the costs are 62 Billion yen. Thus, total benefits reported are only 12% of total costs reported. What this may mean is that you dump as much ad 62 Billion yen only to get the return of 7.6 Billion yen. How do you persuade the top management with this figure to keep on investing in environmental activities actively? We all understand that top management s̀ commitment is essential in the success of a environmental management system, but what makes the top management to be committed to those environmental investment and other efforts?

It is very interesting that there seem to be two different approaches; in the first one, adopted by Japan and Korea, the government exerts a lot of efforts to articulate environmental accounting guidelines, so that the firms can follow it. It is very impressive, and even surprising, that so many Japanese companies already adopted the environmental accounting guidelines in such a short period of time. I d̂ like to interpret it as evidence that the guideline approach is working quite well. However, I would like to know if the adoption of the guideline is really voluntary in Japan, or if there is any kind of pressure from the government. Otherwise, are there any kinds of

incentives from the governments with regard to the adoption of the guidelines.

In the second approach, adopted by the rest of the countries, environmental accounting is basically internally driven and the type and extent of environmental accounting information required for internal decision making differs from company to company. Thus, accounting communities should help firms to develop their own ways of costing and decision making based on the environmental accounting information. In my opinion, each country can take its own approach depending on its social, political and cultural environments.

I believe that there are some key driving forces when corporations adopt and implement environmental management system. In the earlier stages of the development of EMS, the single and the most important issue is the compliance of the laws and regulations (Stage I). Later, corporations start to recognize there is room for cost saving as well as environmental performance improvement. At this stage, corporations take advantage of the opportunities to attain both goals, that is, environmental and financial performance improvement (Stage II). Once companies take advantage of the opportunities, there are no more rooms for cost savings without a break-through (i.e., technology innovation). After Stage II, markets or customers drive corporations to take environmental measures seriously, and make them to take opportunities of sales increase via enhancement of corporation image.

Most of Indonesian companies seem stay in the earliest stage striving to meet the legal requirements. Actually, many firms in Korea reveal the same behavior. Most of them are small and medium sized firms. Thus, in countries where governments take a strong initiative in the economic development the top down approach may work very well, like in Korea and Japan. In this regard, the IPLHI, the professional group in Indonesia, may well consider taking the same approach as Korea and Japan, although I don t know exactly about the social, economic, and cultural environment of Indonesia.

Finally, I would like to ask a brief question to some presenters. The first one goes to Dr. Kokubu. I guess the guidelines aren t mandatory in Japan as I mentioned before. Does the Japanese government provide any incentive to the firms that comply with the environmental accounting guidelines. It is very important to know how the Japanese government is promoting the guideline because the Korean government is in the same situation.

Professor Burritt, you provided us with a very insightful taxonomy of EMA and I would like to point out that the classification scheme is simply true not just for environmental accounting, but also for conventional accounting too. The physical environmental management accounting system can also be included in conventional accounting reports too. So, I would like to emphasize the importance of calculating of environmental costs and segregation of environmental costs from non-environmental ones before we go any further. Please give some comments on my remarks.

And the final question goes to Mr. Mayol. It is very interesting to know that your group, Lopez Group, has been installing and implementing environmental accounting systems. Normally the accounting people and the environment people, mostly engineers, do not get along very well. That is the case in Korea. When I engaged in the case study of a chemical company in Korea, the accounting people were not cooperative at all. They wouldn t give us the information about their accounting information system. Mr. Mayol said that they worked pretty well together in the Lopez case. How did you cope with the possible conflict between those two people? Thank you.

**Miyazaki**

As a question to Dr. Kokubu has just been presented, I ask presenters to respond.

Please make comment, Dr. Kukubu.

**Kokubu**

At the beginning, Mr. Benett asked a very essential question. The most important thing is how environmental accounting information is used for decision-making. I would like to answer this question from following two points, one is what kinds of decision-making are made by using environmental accounting information under the present circumstances, and the other is what information for decision-making purpose is offered.

First of all, I explain about the kinds of decision-making using environmental accounting information under existing circumstances. For example, as Mr. Imai has reported, environmental accounting information according to the current Japanese guideline can give a clear correlation between environmental costs and improvements in environmental performance by the costs. So, by considering both elements, environmental information is used for internal decision-making in producing efficient environmental accounting. Also, by identifying environmental costs, previously unknown inefficiency relating to environmental issues can be found. One is an orientation of such internal use. Problem is how to use this information in disclosing publicly, and this is a very difficult problem. Only what I can tell is that " Analysis of environmental report by eco-fund " has a substantial influence on Japanese environmental accounting, and in the screening of target companies for investment, eco-fund analyzes environmental information disclosure of these companies. It is generally believed that the companies which disclose appropriate environmental information achieve excellent environmental performance and have well-organized internal environmental management accounting system. For that reason, analysis by eco-fund, I think, has an effect on environmental accounting.

However, I believe that a guideline for introducing environmental accounting system of Ministry of Environment (MOE) has more important social significance. As Dr. Kim previously

pointed out, for example, environmental accounting in Matsushita Electric shows 30 billion yen worth of red ink. 30 billion yen worth of red ink means an amount of balance based on expenses of 37 billion yen and kickback of 7 billion yen owing to energy saving and so on. The meaning of this amount has not been socially considered so much. Of course, the costs for conforming applicable laws should be excluded from total costs, however, if the costs occurred from voluntary activities by Matsushita Electric, Matsushita would bear the social costs voluntarily. That is, shareholders of Matsushita bear the costs. Despite the fact that government is supposed to use taxpayer money to pay the costs, Matsushita assumes the payment. This becomes controversial. Thus, it is important for companies to clearly indicate voluntary bearing of environmental costs in environmental accounting as well as performance.

In order to promote voluntary environmental conservation activities by companies, environmental taxes and various regulations are under consideration, and companies disclosing details of voluntary activities through environmental accounting have a chance of utilizing systems which provide incentives such as tax-reduction or subsidiary payment. Although I have recommended Japanese industries to adopt environmental accounting as means of social policy, it is not adequately penetrated yet. But, I think this matter will become important in future.

As a demonstrative example, when the Environmental Agency at the time introduced this guideline for environmental accounting, the agency proposed "Tax benefits based on the amount of environmental costs" to Ministry of Finance. However, Ministry of Finance rejected the proposal as arguing that calculating method of environmental costs is utterly unstructured and the present situation is not in the stage for discussion about tax calculation and so forth. I hear it was finally classified as a medium and long-term agenda. I think the proposal should be now reconsidered.

In this connection, as also asked by Dr. Kim, there is no incentive at present. Despite MOE's efforts to give incentives companies to promote environmental accounting, there is no incentive as yet. So, why environmental accounting has become pervasive? The reason is external use such as eco-fund and advertising effects by newspaper article. That is, supposing that a certain company spent environment costs in its environmental accounting, if effects remain constant, irrespective of the judgment as to whether the spent money has actually a positive influence on environment or not, as the expenses rises up, the company is viewed as more environmentally sensitive firm. The amount of money can cause high impact, in other words, PR effect.

Further, as a point of detail, it is noted that the Japanese MOE's guideline includes depreciation expenses.

**Miyazaki**

Thank you so much, Prof. Kokubu.

Next, please make comments, Dr. Lee.

**Lee**

Professor Kokubu explained many of the questions from Martin, so I just point out a few issues. I understand environmental management is to harmonize environmental sustainability and economic profitability, that is my understanding. In terms of those kinds of preparations, companies introduced environmental management systems based ISO14001, but at the first stages, environmental departments says something about that this is good for the organization and for economical results, but after a couple of years, they cannot say, they cannot show what the results are from the environmental management systems; is there any economic outcomes. In this sense, I think that we need some financial review after environmental management practice. So, the practitioners think about that. We need some indicators in terms of monetary figures. So the ISO14031, there is the environmental performance schemes. Under the schemes, we can find some financial indicators including the investment and expenses. I think that this is quite related to environmental management accounting, so eventually we should show the results of environmental management activity in monetary terms. In that sense, we need environmental management accounting at the base, but practically it is not so easy as we pointed out. At first we have difficulty to classify which is environmental costs and which is not, and how to collect that data, and is it correct or not, how to use it and what is the purpose, who will use it and that kind of questions are raised at the moment. Through my experience, I think that it is easier to find out what is the amount of cost; the problem is, what are the benefits? In that case, we just pointed out other experiences in Japan, the costs was 100 and the Philippines was just 10 or 12 or 15 or whatever, then it is not good news to management. They just expect the 100 expenses and 200 benefits. In that case, we should use the terms of social benefit or something like that. In this case, we will develop some practical concept of benefit, it is one of my issues in the case of Korea.

The second question about how to collect continuous data every year without any additional work by hand, so there is one issue of ERP. We actually tried to introduce ERP in my company, but it is not so easy there is no module for environmental accounting because we don t have exact clarifications on the methodology to adopt that kind of system concretely at the company level, so it is one issue to be taken by ourselves.

Finally, I think that at the moment we can find some useful cases to utilize our concept of EMA in the case of product development or lifecycle assessment, in this case, we can calculate separately project by project. For example, the design for environment, or lifecycle assessment for specific process of product, in that case, we can combine physical data and monetary data. In that case the result can be very helpful to decide their further development for the production at

a high level. It is not an integrated approach, but this is a case-by-case approach, and it can give some short-term results based on environmental management accounting. I would like to try that kind of accounting first, the concrete and integrated result will come later, I think. In the case of what I have just explained, we don t have enough cases and enough concrete framework, but we are building it one by one, so from now on we are focusing on environmental accounting based on this kind of discussions with the many differences and experiences from Japan. I don t have enough time, those are my comments about your presentations, thank you very much.

**Miyazaki**

Next, please make comments, Mr. Burritt.

**Burritt**

I ll just address briefly, as our time is very limited, about two or three of the issues that have been addressed to me. The first issue, addresses the role of accountants in environmental accounting and environmental management accounting. I personally that environmental accountants do have certain strengths in this area, but I don ' t think that financial accountants necessarily have strength in this area. Let me explain. I think management accountants deal with monetary information and physical information every day of their lives. They are concerned with physical efficiency in the organization, they might use standard costing systems, for example, that compare efficiencies with targets and then they report this information, so they monitor it, report it and get feedback, and so on and so forth. They are also involved with monetary information and that goes without saying. Environmental accountants also need expertise in physical and monetary matters. So I actually believe that Prof. Kim s comment is very pertinent, as conventional management accountants and conventional management accounting can be adapted very well to the needs of environmental management accountants and accounting. However, financial accounting is much more focused on the monetary aspects and therefore, although financial accountants in parts of their work and their public reports on financial matters of accounting do deal with physical issues, this is not their strength. And so, I agree with your comment about integration. My focus is always on management accounting as the basis for all accounting information that is made public in due course, and is either disclosed externally or internally. Professor Bennett made some similar comments about the relative importance of accounting and accountants. Well I am not particularly interested in accountants ruling the world, I am more interested in developing a scheme which allows us to look at all of the different types of accounting tools and information that might be available. Whether it is environmental managers or environmental accountants that are the ones who promote these tools and take over the area, I am not too concerned about. I just think that we should have a set of tools, available to

us so that we can develop programs along all of the different dimensions that I have introduced. That is just one point.

The second point is in relation to the usefulness of the framework that I have spoken about, and I was very pleased to see an immediate application in the context of how Japan fares, relative to how Australia fares. To me that is a sign of a useful tool, because you can look at Korea, you can look at Germany, you can look at the US, you can look at Australia, and you could use the tool to develop your own ideas about where gaps exist in the matrix. Now I believe that this is the way we should go. I don t think that there is an area here that we should standardize for the whole of environment management accounting. I think that we can come up with some guidelines in each of these areas. Yes. And we should support developments in each of these areas in each element in the matrix, I think that we could do that. But, in some countries, some elements in the matrix will be more important than in other countries, and this means that we do have to allow for different cultural, political, social and economic settings in different countries. I believe that the matrix directs attention to these issues and could be quite useful as a basis for comparative work. Also, as an academic, I should say that this is very useful to me because it indicates the need for comparative work in this area. It is all well and good to sit and learn from each other s experience, but at the end of the day, we are trying to get some comparisons, so we can look to see if there are any common elements that we can use to develop guidelines. So that is my second point about the framework.

The third point is again related to a comment made by Professor Bennett, and this relates to spending money on improving the environment. Do we want to spend more money because this shows that we are committed to the prevention of pollution, or do we want to spend less money because it shows that we are trying to cut our environmental costs down? I think that the answer to that question is that we need to adopt total quality in environmental management, or TQEM. TQEM tries to draw our attention to that fact we need to cut down on environmental costs which represent " end-of-pipe " expenditures, and we need to increase the amount of money on preventing environmental costs occurring. I think that TQEM is a very good tool and will tell us that we do need to increase environmental costs in some areas, in those preventative areas, and that we do need to decrease them in the failure areas where we are dealing with " end-of-pipe " situations. I think that this is another point to bear in mind.

Finally, a personal problem with the way that this whole area of Environmental Management Accounting is developing especially at the UN DSD, which was raised to some extent by Professor Kim who mentioned that depreciation expense might not be reported in Japan, but investment and operating costs are reported. He said that depreciation is a link between investments and operating costs. One of the problems that I have always had with EMA is that we tend to focus on flows - environmental costs, and environmental benefits. From an accounting

point of view and from a management point of view, I think that we are interested in managing stocks as well as flows, and we should be looking for an environmental management accounting system that integrates or articulates those stocks and flows. Depreciation is a flow that articulates with a stock, an asset. It is something that tells you, you have an opening stock, you have a closing stock, and the difference between the two is the depreciation. This is a very important thing to know as all three should be managed. It is the same in the environmental sense. You have a physical environmental stock at the beginning, you might have degradation of that stock, or depreciation of that stock, and so your natural capital has run down, and then you have a closing stock. Given this information, you have the basis for managing stocks as well as the flows, and I think that we should start to think about those items instead of just focusing on the costs and the flows in EMA, so thank you.

**Mayol**

The questions raised regarding how we are able to bring along the environmental engineer s and the accountants into one forum and work together, if you may allow before I answer that question, can I have a show of hands? How many in this group are engineers or environmental engineers and how many are accountants? How many amongst us are in the engineering field? Okay, just quite a few. How many of us are in the financial field? Okay, quite a few. How about the others?

How we brought along the engineers and work with the accountants was this way. First, our group of companies participated in the case studies on environmental management accounting upon the invitation of PICPA, the Philippine Institute of Certified Public Accountants. So it was sort of we in the environmental engineering field wanted to learn something that this in the forte or in the court of accountants or financial managers. From then on, the environmental engineers of our companies tried to develop an adaptation of PICPA s EMA.

Part of my presentation earlier, our very first step when we applied EMA in our companies was just a consolidation of environment safety and health expenses or costs. At this point there wasn t much help or any need to work together with the accountants. But as we moved towards the 2nd year of implementing EMA, there was a mandate to improve.

Recall that component of our program, which I also presented, the MARS - Management Assessment Rating System. During the first year of implementation of EMA, there were those companies who did good in their EMA, such that they received an award from the Chairman. This triggered a lot of enthusiasm, a sort of motivational factor to the rest of the organization. Those engineers and accountants who did not collaborate at the start, now they are motivated to do so. They probably realized that at the end of the year, their company would likely receive an award from the Chairman.

The next step, as mentioned earlier, is towards TQEM, Total Quality and Environmental Management. As part of our companies ' goal, we would eventually want ESH to be a function or to be a support service where organizations can achieve higher levels of productivity and for that matter, cost efficiency. So all in all, I mean that is a good formula, not only for engineers and accountants, but even the other departments in the companies like human resource management, strategic planning and so on to be together in environmental management programs.

**Miyazaki**

Next, please make comments, Ms. Bratasida.

**Bratasida**

I would like to make a short comment about Professor Kim s suggestion that Indonesia should take the same approach as Japan and Korea. Yes, we will do that if they will make more detail comparison study because we have a different culture and also a different business environment, but for sure the result will be not as fast as Japan has already reached. Thank you.

**Reyes**

I would thank Ms. Tomoko Kurasaka from the Japanese Institute of CPA s for her comments. I would just like to make at least 2 points. The first one is that shown by our experience in the Philippines, the accounting profession can be effective catalysts for the development and promotion of environmental management accounting in business. So, I would suggest any country who would like to initiate programs in environmental management accounting to approach or try to involve the accountants ' organization in your countries because they can definitely give a seal of approval for this practice of EMA. One more suggestion is that when you approach them, please clarify to them that you are not asking them to change the way that they report their income statement balance sheet. Emphasize that you are going to help them assist their companies to make better decisions by providing more information on environmental costs savings as well as returns. Another one, is that you also find the word accounting in environmental management accounting; it doesn t mean that accountants can dominate, because in our experience, we found out that EMA is really more disciplinary. In fact, in many of our courses, engineers do better than the accountants or those in finance. So everyone in the facility and organization can help. Accounts, managers, engineers and people in other expertise. The last point is that as EMA developments in Asia is very fast right now, but I would just like to hope that this development can be sustained in the future for the purpose of promoting sustainable development in the region. Thank you.

**Imai**

I ṁ grateful to Dr. Lee who has pointed out various points.

I would like to explain four issues as follows.

The first issue is what is environmental accounting; the second issue is whether environmental accounting can be used for decision-making by management ; the third issue is the impression when we introduced environmental accounting into Southeast Asia; and the last issue is an idea of cost-effectiveness, which is the most troublesome concept.

Let me get this straight with you, the environmental accounting I presented today is the system used in Matsushita Electric Group, and environmental accounting of Matsushita Electric Group is not necessary identical with that of other companies in Japan. For example, as previously mentioned, as to depreciation expenses, we do not include depreciation expenses in environmental costs at present. As Prof. Kokubu pointed out, Japanese MOE ṡ guideline requires including capital investment and depreciation expenses in costs and therefore environmental accounting of Matsushita Electric deviates a little from the guideline.

I understand environmental accounting as follows. In Matsushita Electric group, top decision-making conference relating to environment is held twice a year, in April and October. The conference is referred to as environmental conference and CEO acts as chairman.

With respect to environmental accounting, the agenda " Introduction of Environmental Accounting to Matsushita Electric Group " was proposed in October 1998. But, before formal proposal, the agenda received a complaint by accounting department. The accounting department told us not to use the confusing term " environmental accounting " at the conference and mention the term without previous notice in the presence of CEO. As Matsushita Electric has already adopted financial accounting and management accounting for management, " Introduction of environmental cost " instead of the confusing " environmental accounting " was proposed as an agenda.

In summary, we have financial accounting for external report, management accounting for managerial decision-making, and environmental accounting. Environmental accounting consists of environmental accounting for external report and environmental accounting for internal use.

The difference between external environmental accounting and internal environmental accounting is whether environmental effects are released externally or they are not released externally but used internally. Environmental costs are the same. I understand like that.

The second issue is whether environmental accounting can be used for managerial decision-making. According to the yesterday ṡ presentation by Mr. Benett, in view of environmental sustainability, balanced scorecard is a very effective tool. If company ṡ value is estimated from a long-term view, not short-time view, environmental element is essential for assessment. In doing so, introduction of balanced scorecard becomes effective so much. I do agree to that. In order

to actually establish and utilize environmental accounting in companies, I think it best to use environmental accounting as one of the assessment of operating performance of each operating units, not environmental performance of corporation. I would like to bring internal environmental accounting of Matsushita Electric Group to this direction.

In the future, performance is evaluated on operating unit basis, such as air conditioning division, audiovisual division, component division, and Japanese and foreign operating units are evaluated on product basis, such as air-conditioner.

With respect to the third issue, the impression when we introduced environmental accounting to Southeast Asia, we spread out environmental accounting worldwide from last year. As Southeast Asia is the largest production base for Matsushita Electric Group, it is important to grasp correctly the environmental costs and the environmental effects in this area. We visited four countries and explained assessment criteria in conformance with Japanese MOE s guideline to a pair of staff from accounting and environment departments in each company. They listened to our explanation with absorbed interest. In every plant, environmental management department has conventionally engaged in sort of end-of-pipe typed operations, including pollution control in production plant, energy conservation etc. However, both of accounting and environment departments welcomed introduction of environmental accounting so much because of participation in management through monetary evaluation of these operations. At the beginning, we were worried that classification of environmental cost in Japan would not fit in Southeast Asia, but it was accepted without causing any trouble.

With respect to cost effectiveness as the fourth issue, when compared actual effects with environment costs, every company has a red ink. Supposing that environmental accounting intends to compare amount of money and physical value, there may be also an estimation that how efficiency including performance has been improved from the viewpoint of eco-efficiency rather than surplus or deficit. In order to take full advantage of environmental accounting in management, it is necessary to acknowledge deemed effects as well as actual effects, for example, environmental risk management (ERM) which is much talked in Japan nowadays, how recovery of ground pollution is considered as effect, and how research and development cost is considered as effect. As shown in my presentation, it is hard to identify research and development effects only in company, so we have to move outside and identify such effects from the viewpoint of social benefit. In connection with ground pollution, introduction of depreciation accounting is now under consideration in Japan. We are really eager to think about cost effectiveness and how to understand deficits at the present by combining depreciation accounting to environmental accounting properly, and so forth.

**Miyazaki**

All of the comments from commentators and the answers from presenters have finished. Please act as chairman, Prof. Kokubu.

**Kokubu**

Thank you very much.

We need to continue discussion about various topics, but this is an inaugural workshop for EMAN-AP and symposium will be held in future. Probably, there are many questions and comments from floor. I hope to receive as many opinions as possible from you without the time limits, and get presenter or commentator to answer, if possible. Furthermore, in response to these opinions, I would like to get others 'argument or counterargument as many as possible.

From now on, including a question by Liu Yon Raymond from Taiwan, I will receive opinions from floor.

I look to you for cooperation.

**Floor**

I would like to share probably with the confusion. When we also introduce environmental accounting in the Philippines, this might be a play of words, but it might mean something. When you say, " environmental management accounting ", it might mean environmental management, you manage the environment, and you report on it. The other one is, " environment management accounting "-management accounting for the environment. That is why that we made it very clear in the Philippines that one aspect of the CPA s job on the external reporting side is that they attest as to whether the company is towing the line on environmental issues, because it will effect the financials later on, and this is the obligation of the accountant as an external reporter, for up to the auditor level. Now the other phase that is, in 1999, our theme was CPA business advisor. The account now is a Dr. Jeckyl and Mr. Hyde personality; one is external and internal as pointed out by Professor Burritt. In fact, I am glad that Mr. Burritt also raised this point. The reason why we were successful in the Philippines was because we followed what precisely the principle of TQEM, as Professor Burritt said, and we looked into the prevention aspect and we told our accountants that you have to change, you don t have to focus on becoming an external reporter, you have to focus on the management accounting aspect. So, I think that should be very clear that one aspect is reporting on the social responsibilities side of the accountant, and the other aspect is precisely what you have mentioned here, that is a decision support environmental accounting system, and I was glad that that was even shown in the value chain presented by Professor Burritt. The world of the accountant is changing; we might not even have the word, " accountant " in the future because of information. The CIO,

the Chief Information Officer, and if we don t get out of our shell in accounting, we won t know about ERP and value chain, there would be a confusion. We are confused because the accountants now are actually metamorphosing into another kind of animal. But I think that it is very clear; one aspect is that the social responsibility reporting aspect, the other aspect is the decision support aspect of environmental accounting. Thank you.

**Kokubu**

I would like to receive comments from floor continuously. Next, please give your comments, Dr. Amano.

**Amano**

I am a member of IGES Kansai Research Center.

With respect to costs and effects in environmental accounting, it is said that costs of 62.2 billion yen and effect of 7.2 billion yen shows a substantial deficit. Although I am not an expert on accounting, I know a concept of compliance cost. It is the cost for complying with laws. In the material submitted from Mr. Imai, environmental costs in fiscal year 2000 comprise capital investment and costs. It is difficult to decide which of pollution prevention, energy conservation at operating units (there is energy conservation law in Japan), disposal reduction and recycling of waste correspond to the compliance cost, but, broadly speaking, all of them can be classified as the present and future compliance costs.

And, research and development cost, providing that it is the expense for the far and medium-term future, 70 to 80% of 62.2 billion yen of environmental costs in fiscal year 2000 may belong to compliance costs.

In my opinion, any remainder after subtracting the compliance costs and further reserve for larger compliance costs in future from total costs shows deficits, thereby generating accountability to shareholders. However, it may be incorrect to think that the all of the remainder, that is, 62.2 billion yen minus 7.6 billion yen are deficits.

Moreover, what interests me in Imai s figure is that social benefits are outside of the environmental accounting and Mr. Imai tries to change the concept. The social benefits correspond to external costs in economic terminology as mentioned by Dr. Kim. Nevertheless, there is a possibility that consumer electronics industry must bear some part of the external costs and Matsushita Electric must also bear a part. Therefore, companies, in the light of the external costs, have to spend a large amount of money for research and development. So, in my opinion, if these concepts are defined in environmental accounting, the misunderstanding of large deficits will be removed.

**Kokubu**

I would like to think over about the matter.

Next, please give us your comments, Mr. Liu from Taiwan, in the backward.

**Floor**

I work for the Taiwan Environmental Management Association. We have been promoting environmental management systems in Taiwan for five years and we have about 2,000 companies already ISO14001 certified. But, we have 13,000 SMEs, small and medium industries. I think that this is a very good beginning for environmental management accounting and environmental cost accounting. So this is the beginning. So now we are thinking how we are going to promote EMA in Taiwan. There is a very controversial fact of ISO 14000: environmental management system. Even after 5 years after promoting that, we have 2,000 companies that have ISO 14000 Certified. But, some of local experts are still saying that we should develop some simplified EMS for the SMEs, facing the 13,000 SMEs in Taiwan, instead of ISO 14000 just to the big or large corporations in Taiwan. And now, this is the beginning of EMA. So, what should we do? The question is, should we develop a simplified EMA for the SME, so that they can use it effectively? Or, should we just focus on the large public listed companies in Taiwan and promoting EMA? Or on the other hand, do we develop just for the environmental managers in each company or do we develop and promote through the accountants? So, this is the question that we would like to promote, we would like to ask the European experts and also the Japanese companies what would be the European experience or the Japanese experience? How are we going to promote this to SMEs in Asia? Thank you.

**Floor**

Earlier in this discussion, there were the statement about the necessity of financial indicator concerning to environmental costs and environmental effects. I also think that the ultimate theme in environmental management accounting is measurement of environmental costs and environmental effects.

So, I would like to refer to the material reported by Mr. Imai a little while ago. Notes " For capital investment made during the previous year, do not book its effects achieved this year ", which appears on p. 196 in the Japanese version, p. 205 in the English version of the handout, may be a controversial point.

The reason is as follows: the effect due to capital investment made during the previous year is not booked this year so as to measure only the effect due to investment made during the present year. But, if the situation continues, investment effects will be decreasing year after year. As a result, the effects become underestimated with the course of time. Accordingly, in the case that

environmental costs and environmental effects are compared for analysis in time series, cost-effectiveness analysis in time series cannot be achieved properly. In order to prevent such situation, I think that it is necessary to combine flows and stocks as Mr. Burritt stated earlier in this discussion.

The combination of flows and stocks means that in the measurement of environmental costs and environmental effects, flows are compared without ignoring stocks. For the correct measurement of effect of flow, stocks must be also included in computation, so we must manage to bring to completion.

**Floor**

I would like to ask three questions.

The first question is a matter of costs and benefits. In the case of Matsushita, large amount of deficits were accounted for honestly. Huge deficits were placed on the table, but when I visited at a company, the company has suffered huge deficits every year according to information of environmental accounting. Owing to the huge deficits, management decided to abandon environmental considerations and environmental accounting section lost its motivation. Someone told me that estimated figures of benefits were dressed up so as to exceed costs, so that both management and environment department can find significance in their duties. Unless doing so, environmental accounting cannot be continued in the company. Window dressing may be too exaggerated, but according to what I v̇e been heard, unless a budget surplus is achieved by incorporating deemed effects in this way, environmental accounting is unlikely to become established.

The reason why Ministry of Environment is conscious about environmental benefits is that the estimation is left to the discretion of each company. As Prof. Kokubu pointed out, whether EMA becomes established, who uses EMA, and how EMA is used, these issues have been always discussed and it has been emphasized that EMA ṡ establishment requires external pressure such as eco-fund. How should management adopt environmental accounting and exploit? The philosophy or social responsibility of management is now being asked. Unless external pressure is given, or unless a budget surplus is achieved, management cannot adopt environmental accounting, such companies are threatened the existence. I would like to hear the opinions of parties concerned in companies.

Next, I would like to ask Roger Burrit, who is a coauthor with Professor Schaltegger. A conceptual framework is shown in figure 6. In the case of Professor Schaltegger, environmental accounting is classified as environmental differences accounting and ecological accounting, each of the two being further divided into internal and external. In the figure of Mr. Burritt, I feel like that environmental differences accounting and internal of ecological accounting are extracted. I

would like to ask if there is any commonality between the framework of Prof. Schaltegger and that of Mr. Burritt, or these frameworks are different from each other.

I will ask the third question to Mr. Burritt and Mr. Benett. The question relates to users of environmental accounting. For management, how the improvements in environment are reflected upon costs and how much benefits are increased in monetary term, that is, cost-

benefit in monetary term is more important rather than how much the environment is improved. However, for our ordinary citizen, how much the environmental is improved or deteriorated in physical term is more important matter of concern.

As MOE's guideline provides carbon reduction and so on as problems plaguing the global environment, as a result of independent corporate efforts, how much environment in an area, all of Philippine, or the entire globe is improved or deteriorated in physical term, is a very big issue for our global citizen.

Therefore, although not in line with this workshop, I would like to ask to especially Mr. Burritt and Mr. Benett, who teach economics in university. I think only micro environmental accounting is inadequate to environmental accounting. In United Nations and the similar organization, macro environmental accounting has been also developed. Do you think about tie-up with it? And, do you take it as subject of research?

**Floor**

First of all, I would like to add to what Dr. Kim told about definition of term. I specialize in management accounting. When "management accounting" is referred to in Japan, it is generally limited to internal accounting. "Financial accounting" directs to external accounting, and "management accounting" directs to internal accounting. There is no confusion in these two terms, but see to figure of Mr. Imai "Expansion of Environmental Accounting Concept" on p. 207 in the English version of this handout. As producers have borne recycling costs of products conventionally, in this figure, products are shown outside of companies as output. Quite recently, during interview, many companies tell that they will sell services, not products for the future. If the trend continues, despite being output, products will be shown inside of companies and services will be moved outward.

In Japan, management accounting information includes, for example, running cost of refrigerator, so when we try to purchase a refrigerator, the price is not necessarily primary requirement.

Thus, as Mr. Benett pointed out, on one hand, we need to meet users' needs, but on the other hand, we need to get out users' needs or make users notice their needs. Viewed in this light, it is impossible to comprehend management accounting systematically and it is possible to take it as a signal or a management tool for providing information, instead.

**Floor**

Materials include "For Understanding of Environmental Accounting" issued by MOE, I want to avoid debate about whether environmental accounting is in red-ink or black-ink. As every person in charge agrees, such attitude of top management can cause uncomfortable situation. Environmental accounting is a tool, not an objective. Our objectives are to improve environmental performance indicator, make efforts to save energy, and contribute to reduction in air pollution, soil pollution and wastes, thereby enhancing environmental performance. Unless we proceed to a discussion with the aim of searching for the best solution, things are thrown into confusion.

To bring it all down to earth, when top executive introduce environmental accounting, environmental cost-consciousness of individual employee improves and the employees become to save power or water, resulting in that company profits increase. As a result, top management is highly motivated. I was a chief of a planning and coordination division of MOE. As mentioned above, what embarrasses person in charge most, is that management tends to discuss whether deficit balance or credit balance. It is not correct. How much money we have to spend in order to comply with environmental standards? How can we perform at lower cost? Alternatively, by protecting environment, various profits can cause instead of costs, leading to corporate profits? I want management to debate about these things.

**Kokubu**

We have little time to leave, but if anybody would very much like to answer, we will accept. Especially, I want Mr. Burritt to explain a bit more in response to the penetrating question about the difference from the theory of Prof. Schaltegger.

**Burritt**

Thank you. I will make three points. Just very briefly in relation to the questions directed to specifically at me. I can say that I work very closely with Professor, Dr. Stefan Schaltegger in Germany. He knows the developments that have been put in front of you. These ideas have in fact developed since the publication of our book. [Contemporary Environmental Accounting: Greenleaf Publishing: Sheffield, 2000]. The book was published at the end of 2000, but it was completely written by the end of 1999. We had to move on with our ideas slightly, as we have been involved with the United Nations Division of Sustainable Development, and some work that we have been doing there, and because of that, we have tried to develop terminology which people in all of the United Nations countries agree on. The terms used in my paper are really related to these more recent developments. I know we are planning a second edition of our book in due course, and we will make the adjustments to the terminology there. In particular,

ecological accounting will become PEMA and MEMA as particular forms of environmental accounting. PEMA is physical environmental management accounting, and MEMA is monetary environmental management accounting. So that is one point.

The second point is in relation to the fact that various people would like to have targets for environmental improvement. Various people would like to be able to say we are improving relative to those targets. Eco-efficiency might be one way to try to promote that, but eco-effectiveness is as important an idea. With eco-effectiveness, you set a target, you find out how close to the target you are, and you can report it internally or externally to any particular parties who are interested. Within the matrix and the framework that we have developed, if we look into the future, we might be predicting what our environmental impacts are going to be in a physical sense and how we can actually target in some of those desired objectives. Then, we can report after the event, in an ex-post sense, to see if we have achieved the goals. So, I think that these ideas are entirely consistent with the framework that is being put forward, but I am open to your suggestions about this. And a final point that has been mentioned in relation to the macro side of environmental accounting, are we just interested in what is happening at the company level, for example, are we interested that a whole area of macro environmental accounting exists? Well we are certainly interested in macro environmental accounting and we take note of the fact that there is quite an important system, the SEEA system, the integrated environmental and economic accounting system, which the United Nations promotes. It is interesting to note that in Europe, EUROSTAT, the statistical agency for Europe, is actually adopting the macro environmental accounting classifications for use by corporations within Europe. It is also interesting to note that in Australia, the Victorian Environmental Protection Agency is considering adopting the SEEA framework for classifications within some government activities and in particular, local government activities in Australia, and so there is this link with the macro environmental accounting side. I could expand on this, but it would probably be inappropriate at the moment.

**Kokubu**

We should proceed to a discussion, but this is an inaugural workshop for EMAN-AP and EMAN-AP is a continuous organization. We will take note of the contents of today ś discussion, post them on website of EMAN-AP, and in consideration of the record, prepare for next workshop.

Registration with EMAN-AP requires no registration fee. If you want to register, please present your business card at secretariat on taking your leave so that we will send you registration documents later. I am grateful for your support.

Today, panelists and audiences, many thanks for your kind cooperation.

**MC**

**Thank you for your attendance over the long time.**

**Today's workshop has finished. We will move to "Pearl Room" of 10th floor and hold a convivial party there. The party is estimated to wind up at 7 o'clock. Should you wish to exchange opinions further, please come to the party.**

**Finally, please give a big hand to Prof. Kokubu as chairman, Dr. Miyazaki, commentators, and presenters, once again.**

**I appreciate it very much.**