

# SRI LANKA ECONOMIC JOURNAL

---

VOL 6.

APRIL 1991

No. 1

---

## C O N T E N T S

### *Articles :*

	PAGE
SEMINAR ON GEM INDUSTRY — HON. D B WIJETUNGE	01
GEM INDUSTRY IN SRI LANKA — H N S KARUNATILAKE	03
GEM RESOURCES IN SRI LANKA IN RELATION TO GEM RESOURCES IN OTHER COUNTRIES OF THE WORLD — C B DISSANAYAKE	09
ENHANCING THE PRESENT GEM EXPORT POTENTIAL BY INCREASED VALUE ADDED — A E T ELLAWALA	15
POTENTIAL FOR MOBILIZATION OF RESOURCES THROUGH THE DEVELOPMENT OF THE GEM INDUSTRY — N L SIRISENA	23
IMPROVING THE PRESENT GEM AND JEWELLERY INDUSTRY POLICIES — A M M SAHABDEEN	31
GEM EXPORTS IN SRI LANKA — V MERVYN FERNANDO	37
PANEL DISCUSSION — NOWFEL JABIR K SHANMUGALINGAM	55 57

---

SRI LANKA ECONOMIC ASSOCIATION





## SRI LANKA ECONOMIC ASSOCIATION

- President :* — DR. GAMINI COREA
- Vice Presidents :* — DR. J. B. KELEGAMA  
DR. H. N. S. KARUNATILAKE  
PROF. A. D. V. DE S. INDRARATNA  
PROF. B. HEWAVITHARANA  
MR. A. S. JAYAWARDENA  
MR. P. H. SIRIWARDENA
- General Secretary :* — MR. K. G. D. D. DHEERASINGHE
- Assistant Secretary :* — MR. H. N. THENUWSRA
- Treasurer :* — MR. T. B. SUBASINGHE
- Assistant Treasurer :* — DR. U. VIDANAPATHIRANA
- Editor :* — DR. N. L. SIRISENA
- Committee :* — MR. MAHINDA WIJENAIKE  
MR. V. K. WICKRAMASINGHE  
MR. RAJA KORALE  
PROF. S. A. K. KARUNANAYAKE  
MR. M. R. FERNANDO  
MR. K. JEGARAJASINGHAM  
MR. A. M. A. ABEYSINGHE  
MR. P. T. SIRISENA  
DR. V. RAMANADAN
- Editorial Board :* — DR. GAMANI COREA  
DR. J. B. KELEGAMA  
PROF. A. D. V. DE S. INDRARATNA  
DR. H. N. S. KARUNATILAKE  
PROF. B. HEWAVITHARANA  
DR. N. L. SIRISENA
- Distribution Manager :* — MR. M. R. FERNANDO



# SRI LANKA ECONOMIC JOURNAL

---

Vol. 6

April 1991

No. 1

---

## Contents

<i>Articles:</i>		Page
Seminar on Gem Industry	— Hon. D B Wijetunge	01
Gem Industry in Sri Lanka	— H N S Karunatilake	03
Gem Resources in Sri Lanka in relation to Gem Resources in Other Countries of the World	— C B Dissanayake	09
Enhancing the Present Gem Export Potential by Increased Value Added	— A E T Ellawala	15
Potential for Mobilization of Resources through the Development of the Gem Industry	— N L Sirisena	23
Improving the Present Gem and Jewellery Industry Policies	— A M M Sahabdeen	31
Gem Exports in Sri Lanka	— V Mervyn Fernando	37
Panel Discussion	— Nowfel Jabir K. Shanmugalingam	55 57



## **SRI LANKA ECONOMIC JOURNAL**

Articles, comments and reviews for publication, and books for review should be addressed to the Editor, Sri Lanka Economic Journal, No. 61, Carmel Road, Colombo 3, Sri Lanka. Correspondence regarding membership and subscription should reach the Treasurer, Sri Lanka Economic Association, No. 61 Carmel Road, Colombo 3, Sri Lanka.

### **Subscription Rates**

Foreign (Annual-Two Nos.)	US £	20
Local (Non-Members)	SL Rs.	200
Members	SL Rs.	100

### **Annual Membership**

Individual	SL Rs.	60
Institutional	SL Rs.	1000

### **Life Membership**

Individual	SL Rs.	500
Institutional	SL Rs.	5000

### **Commercial Distribution**

**Lake House Bookshop**  
**Colombo 2**  
**Sri Lanka.**



# THE SEMINAR ON GEM INDUSTRY\*

HON. D. B. WIJETUNGE

*Prime Minister and Minister of Finance*

MR. Chairman, Governor of the Central Bank, Ladies and Gentlemen. It gives me great pleasure to be here with you this morning to inaugurate the Seminar on Gem Industry organised by the Sri Lanka Economic Association in collaboration with the Export Development Board and the Gem Traders' Association. As you know, the Sri Lanka Economic Association has been in the forefront in initiating discussions and writing on economic issues that are policy oriented and are of current interest. It has during the past four years brought out without interruption an economic journal which has had a number of very useful articles on the Sri Lanka economy. Equally the Sri Lanka Export Development Board has made practical studies on the gem industry and its potential and so far it appears to be the only official institution that has done so. The theme selected for the present seminar is very significant in the context of the role that the gem and jewellery industry could play in rapidly increasing employment and growth in our economy. Therefore, I congratulate the three institutions that have sponsored and organised this seminar on a subject of national importance.

The history of gem industry in Sri Lanka goes back to more than 1500 years. According to historical sources, Sri Lanka had over the centuries, particularly in the times of the Sinhala kings engaged in a thriving trade in gems with both Western and Eastern countries. There is no doubt that this must have brought prosperity to the great kingdoms of the past. Although gem exports from Sri Lanka have increased ever since, the country has still to derive the maximum benefits from this great natural resource. However, a disquieting feature is that although the production of gems has always been high, because of the sustained demand from abroad, only a small amount of foreign exchange has accrued to the country. The challenge before us today is to restructure and revamp the industry so that it would turn out to be the leading export earner and would help us to obtain adequate foreign exchange to rapidly carry out our poverty alleviation and development programme.

Upto about 1988, the government was not able to derive the maximum benefits from the gem and jewellery industry because an appropriate set of policies had not been put into effect.. However, under the very thoughtful

---

\* Text of the Inaugural Address on the Seminar on Gem Industry, 18th August, 1990



directions issued by His Excellency the President, the official committee on the gem industry, which he appointed this year, has been working out a set of policies and measures to add strength to the industry and to see that it would make a contribution to Sri Lanka's development in a very short time. The opportunities for development available in the industry are not merely confined to mining. As far as mining is concerned, production has been going up from year to year and Sri Lanka miners and gem merchants have been mostly selling rough stones to foreign buyers.

Quite apart from the mining aspects there are so many other areas which could assist the development of the country. We must take immediate steps to develop the cutting, polishing and calibrating trade which has got immense potential for expansion. Most of you, no doubt, are aware that in India, Thailand and Hongkong and several other Asian countries, the cutting and calibrating of stones have provided a large volume of employment. I have been told that one of the quickest ways of generating more employment for our youth is by training them in the gem cutting industry. From the national point of view, this means that more value is added to our stones by cutting and calibrating these stones in Sri Lanka.

There is also the jewellery industry which has a great potential and I am told that foreign buyers are interested in placing large orders with manufacturing jewellers here. The government will make every endeavour to provide manufacturing jewellers with the raw materials that they need to cope with the large orders they are likely to receive in the near future. We have also taken substantial steps to reorganise the trade in geuda which was, until the 1st of this month, undertaken under the Thai Sri Lanka Geuda Agreement. The trade has now been opened to all nationals who are interested in purchasing geuda stones. We are perhaps, the only country that has large deposits of geuda which can be heat treated successfully. I am glad to note that some businessmen in the gem trade in Sri Lanka are now keen on perfecting and disseminating the technical know-how of heat treatment of geudas and producing valuable blue sapphires.

Before I conclude, I would like all of you in the gem trade to cooperate with the government so that the policies and measures which the government is now implementing would produce results. The geuda traders and geuda merchants should cooperate with the government and help the country to earn much more foreign exchange from this trade than we have done hitherto. I conclude by wishing this seminar all success and I hope that the discussions today would be policy oriented and would contribute to new ideas and strategies which will further the interests of not only those who are in the trade now but also the official agencies which the government proposes to set up, particularly the National Gem Authority so that the latter could provide maximum benefits in the form of greater production and additional foreign exchange for the country.



# GEM INDUSTRY IN SRI LANKA\*

H. N. S. KARUNATILAKE

THE Hon. Prime Minister, Chairman, distinguished guests, participants and ladies and gentlemen. The topic of gems and jewellery has very seldom been discussed in this country although gemming, manufacturing jewellery and other associated trades have had a very long history. The origins of the gem and jewellery trade go back to the very early times in our history because other than paddy and iron manufactures, a major area of economic activity has been the cutting and polishing of gems and jewellery making. The descendants of the original workers in these trades still survive in different parts of the country and they are engaged in this vocation in the traditional manner. Pictures of ancient vocations which are found in old documents relating to Sri Lanka, depict paintings or pencil sketches of the art of making jewellery and ornamental ware out of silver and other precious metals. The decorative wear of the Kandyan dancer exemplifies the intricate work of very high quality of our ancient jewellers and their skills.

Now Professor Hewavitharane referred to the resource base of the country and he stated that, what we have is what we have. I certainly agree with that. But I like to point out certain characteristics of the gems that we have. In fact, my observations have shown that of all the minerals that we have the precious and semi precious stones are most widely distributed in the country. The more I travel in this country the more I hear of people having found gems and they are found all over. You can go to Polonnaruwa, Elahera, Kandy, N'Eliya, Okkampitiya, Badulla, Matara, and Ambalantota, people are digging all the time for gems. The problem I see is that they dig huge holes but there is no one to fill them up. I was at Ambalantota last weekend, and in Elahera yesterday and there were a large number of mines which were in operation. A resource which is widespread obviously has significant economic benefits to people. The more widespread a resource, the more uniform the impact of that resource is on the society, on income distribution, on poverty and prosperity.

As I see it the gem industry has been a great income redistributing force in Sri Lanka. Yesterday I was at Rattota and a little boy who was working with a group of miners pulled out a piece of topaz which was 4"x2" in size and

---

\* Keynote address given at the Seminar on Gem Industry, 18th August, 1990.



he just washed it; he was so sure of the item that he had not even washed the stone before. But after he washed it that piece was worth about Rs. 3,000. That is the way the income distribution has taken and it shows that everyone who is in a village prospers from the gem industry. Income sharing is the essence of traditional gem mining where every participant in the business gets a share of the proceeds. The land owner gets a share, the miner gets a share and the man who provides the water pump gets his share and everyone benefits. So there is an automatic built-in income distribution which is ideal for our society. In that context we must be very careful when you look at other arrangements for the exploitation of these resources in this country. I have seen some large scale mining operations on which I will comment later on but I have some more important things to say about the industry. That is the impact that it can have at the present time on our economy. In fact, gemming has been going on all along but in the postwar years there has been a resurgence due to Western prosperity and the demand for stones in a big way in all countries of the world not necessarily in the rich countries. This has resulted in a very sharp rise in prices, the price rise has also been influenced by general world inflation because I know a sapphire which was worth only Rs. 100/- in 1950 is now worth more than Rs. 200,000. That is the kind of price change that has taken place. In this context the industry as a whole, especially the gem industry and to some extent the jewellery industry, has a very important part to play. It is the most valuable, the most widespread and the biggest resource we have in value terms. There is no question about it.

My impression on production would tend to indicate that the gem industry alone can bring us enough foreign exchange to meet all our requirements. We can even forget about the traditional industries. Each time I go and meet a man who is in the gem trade, even a poor miner I have found that he has about 2 lakhs worth of stones. Yesterday I saw two pieces of garnets, they must have weighed about 50 carats each and he said each was 40. That means Rs. 40,000 per stone and he was a poor miner. And this was just one man living in a thatched house. This is the kind of wealth that they possess and how many people like this are there in this country? If you see the available stocks of gems in the country, there are thousands of gem and jewellery shops all over the country. Any village has at least one or two shops that sell gems which are in close proximity to mining areas. Now all these shops carry stocks; has anyone taken the trouble to value all these stocks. All our GNP estimates are nowhere near reality if these stocks are properly valued.

In the gem industry, you have a primary, secondary and tertiary value system; the miner sells it at a pittance, the middleman sells it at a profit and ultimately when it goes to Switzerland, Belgium or to Japan, the price is 500 or a 1000 per cent more. How much do we get? We in this country must now look at the trade in this light. As far as I see it, it is the one resource



that we have which can create a real breakthrough or a take-off in development; our development can gather tremendous momentum if we harness the resources available in the gem industry. Also gems have another unique characteristic as I have mentioned earlier. Unlike other commodities there are no downward price fluctuations. The prices of other commodities like silver, gold and platinum, have all fluctuated very widely in the last six months. Gold prices have gone up from 340 per fine ounce to 420 per fine ounce in the last couple of weeks. But the prices of gems never fluctuate; they always go up permanently and if you add it to your reserve there is always appreciation. It is good to build up a gem reserve that does not fluctuate in value.

In fact, you are quite sure of making capital gains by holding gems. You cannot do it by holding gold because at a given time the price in the open market may be far below the price you paid. Because the price continues to appreciate, gems can be sold at a profit without waiting. As I have indicated many a time, we should think of building up a reserve with our own gems, mainly coloured stones, to strengthen the economy. It will be a reserve that will be highly convertible as there is a ready market. Because if the Japanese do not buy the Swiss and Americans will buy; there is no single market for the product. The market for gems is global and you can take gems to any country, and there will be buyers. Other commodities may be subject to preferences and tastes, but for the gem as a commodity there is universal preference. I have still not come across a man or woman who dislikes a gem. Even if you have given up worldly and material pleasures, people prefer gems and even in the temples we have gems adorning them. The sacred caskets are studded with gems, even though our priesthood may have got over the desires for material things. Those are special characteristics of a unique resource that we have.

With regard to the industry itself the problems we have had are essentially associated with the general economic problems in the country. The eternal scarcity of foreign exchange we have had since the time we got freedom in 1948 and the demand for foreign exchange for certain needs of the people. The controls we have had have also contributed to the problem. I think we have had a lot to do with the fact that the gem industry has remained a secret industry, it is still a secretive industry, there is very little that is spoken about it, and as I mentioned earlier this is one of the few seminars we have held and I know that the people in the trade do not want to participate in discussion. There is more action in the gem trade than talk. I think it is a good thing. But at the same time the action must bring benefits and it might be useful to talk to the people in the trade because they must be appraised of the national role that the gem trade can play in this country.



Now coming back to main issue I raised about the gem trade. I am sorry to say, that it has been the main mechanism for the transfer of funds out of the country. Because of certain intrinsic characteristics of gem stones—the size and the tremendous value, a gem worth Rs. 5 million could be transported in your pocket without being noticed. And these are the advantages. The transmission is a very easy and effective and could be affected without loss unless you are detected. This is a means that has been used right throughout by the trade and the people because the controls we have had on the availability of foreign exchange. As a result, as Professor Hewavitharane pointed out we have been producing a lot of gems but we have not realised the full benefits because much of it has gone outside. But ultimately there is one satisfactory feature. Though we lose the exchange, however within a 360 day period or a little more the benefits eventually will come back to the country. That is, it might take several years but the benefits come back in the form of goods or services.

In the era of shortages upto 1977 most of the proceeds came back in the form of manufactured goods, motorcars and so on. Also a part of the earnings from the gem trade comes back in the form of educated people. Most of the funding for education abroad even upto now is done on the basis of exchange that is made available outside the normal allocations. As I know it, the official exchange allocations made for travel and for education are really a pittance in terms of what you need. But how do people survive abroad especially when they do not work? These are all interesting questions and I could say that this is sort of contribution that the gem trade has made to this country. It is an important contribution though it is not a direct contribution to the balance of payments. From an accounting angle the contribution is not significant at all because it is never recorded. But ultimately the benefits come back to the country. But then that does not solve our problem.

Afterall, foreign exchange must be available to us so that we can expend it on the basis of priorities, not merely the priorities of the individual but the priorities of the nation and this is where there is a dichotomy in the system. We must have the exchange for our development efforts. It is not fair for this money or resources to be used for ones individual benefits or advantages. We have to solve the problems of our people. It is a natural resource that we have and every one especially the poor people in the areas where these minerals are mined should have the benefit. In the future years, our endeavours should be to harness more of the resources in the trade for development and particularly for the programme which His Excellency has launched which is the Poverty Alleviation Programme. We must endeavour to transfer the resources generated by the trade back to this country.



I am sorry to say that our gem industry has made many countries very rich in the Asian region. I can point to Singapore, Hongkong and Thailand. I remember going to Singapore twenty years ago, there were small traders in the Bridge Street and Arab Street and places like that had huge bowls of Sri Lankan gems. They were quite cheap then. All these came from Sri Lanka and that added to their prosperity. Even in the case of Thailand, Thailand now claims of a high growth rate and is categorised as a newly industrialised country. But what they have forgotten and what we do not realise is that we have contributed to their prosperity. Although Thailand has a lot of poor people, in statistical terms it is doing magnificently and the world over people are impressed by her performance. But what is the real genesis of this prosperity? One must realise that we have made a significant contribution and the unfortunate feature is that we ourselves have not made an effort to get the maximum benefits out of this.

The internalisation of the gem and jewellery trade is a very vital thing that we now have to consider. That means, the activity, the secondary and the tertiary spin offs from the raw material that this country produces must come back to the country. If that is done, then of course, the factor where the rough stones go out to build up exchange resources outside will diminish. While it is relatively easy to take away rough stones it would be more difficult to take away if the stones are fitted onto jewellery and if more value is added which means that the whole thing becomes more formalised and valuation also becomes much easier. In that context, if we internalise the trade by cutting, polishing, calibrating and by converting a part of the semi precious and precious stones into manufactured jewellery all this will create employment in the country. My observations on visiting lapidaries and areas where mining takes place shows that the volume of employment that can be generated particularly from the lapidary industry is really enormous. I have read of one million gem cutters in Bangkok, 600,000 in Bombay and hundreds of thousands in other Asian centres and even in countries which are far less developed than ourselves.

We have been producing the stones all along. Many of the countries that cut the stones today as Prof. Hevavitharana said, do not produce the stones. We have a great future in this country especially in the light of unemployment in the rural areas for the lapidary industry. Looking at the lapidaries that are now operating I find that one can produce a skilled gem cutter in a matter of two months. During the training period he also earns money because he is adding value to the stones. Though the cut stones may not be perfect they are good enough for our local market because the ordinary people who wear jewellery do not detect the flaws and defects in cutting and even elementary flaws in the stones. The opportunities are tremendous and I commend all of you in the industry to train more and more of our youth in the art of lapidary



work because it is a very remunerative job especially if you are paying them on a piece rate. I am sure that most people can earn Rs. 6,000/- to Rs. 7000/- a month and that is the sort of salary that our youth are now seeking.

As for the Government, as the Hon. Prime Minister indicated the Government is taking a very positive stance on the industry. It wants to turn it around so that it will be the main mechanism for spearheading the present development effort to reach a more effective level of prosperity among our people. We also need the foreign exchange because the estimates I have made is that we can get a comfortable Rs. 15 to 20 billion at the current rate of exchange if the industry is turned around and resources come back to us. With that in view at least the official committee on the Gem Industry is now embarking on several projects.

One is that the geuda trade has been thrown open to all nations, secondly, the gem and the jewellery exchange is being set up, thirdly the National Gem Authority is being set up and then there is the Gem Trading Bank. But one must not forget that the activities in the industry need not be confined to the institutions that I mentioned. Because everyone else can participate in this industry. I know that some commercial banks feel that they have nothing to do with the gem industry. What I should say is that there are tremendous opportunities in the industry. And they must not confine their activities to the traditional areas, because the industry offers a lot of opportunities and all you need to do is to change or improve the quality of your staff so that they know what other activities there are? There is no point in financing, tea, rubber, coconut or giving credit to businessmen in the city.

I think the commercial banks themselves must play a more positive role by financing the gem industry and for that you need a few knowledgeable people. You need valuers, a couple of people who can identify gems and my own experience shows that this is not a difficult task. Because most bank officers are intelligent people and they would certainly like to get interested in the trade because there are also opportunities that when they retire they can make much more money than they do now. The total value of their superannuation benefits can be made in one gem transaction. This is a very important message for all of you and I trust that most of you will take a positive interest in this trade because it is going to bring you tremendous personal benefits. I will end with that message. I am happy that I have been asked to deliver this keynote address because I know that this is the one industry which can completely turn the economy around in a matter of 12 months.



# GEM RESOURCES IN SRI LANKA IN RELATION TO GEM RESOURCES IN OTHER COUNTRIES OF THE WORLD

C. B. DISSANAYAKE

FIRST and foremost I would like to thank the organisers for giving me this opportunity to give you some impressions on our work and also to learn from other speakers. Having listened to Dr. Karunatilake's speech I am convinced that we as geologists should know very much more, about what happens to gems after they are unearthed. It is certainly a great thing that the Governor of the Central Bank has such good knowledge of mineralogy and geology, a tremendous advantage to a man of his capacity.

First of all I would like to give an overview of the gem deposits of the world. I recommend highly the Journal of the Gemmological Institute of America, which gives a review of the world's gem deposits. The World Gem Map published by the Swiss Gemmological Association which I believe is the work of Dr. Gubelin shows the countries that have gem deposits. In South America, Columbia for instance is an important country for minerals. Eventhough there is competition for them from other countries particularly the African countries, they are discovering more and more deposits there. Brazil too has large mineral deposits which is not surprising as its a large country. Africa is reasonably well endowed with mineral deposits. Especially Tanzania, Madagascar, Mozambique, Zambia, Nigeria and of course South Africa and Namibia for diamonds in particular. In South East Asia such as Indonesia, Cambodia, Thailand and the Thai border with Cambodia where the famous deposits of Chantaburi are located are rich in mineral deposits. Intensive mining is being done in the Chantaburi area. Burma and Pakistan are also areas rich in mineral deposits. Australia is continuously discovering new diamond deposits and are now almost on top of the list. There are huge terrains in Australia which have still not been exploited and there are possibilities that many more diamond deposits will be discovered there.

Referring to Professor Hewavitharane's speech, it is true that we have what we have. However, our main problem is that we still do not know what we have. It is very important that we inventorise or really know what we have



or else it would be rather difficult for policy makers and others. Even in the United States of America, they are still discovering mineral deposits, which means that they still do not know what they have. Chances are that there are many more mineral deposits than have so far been discovered. This is true not only for Sri Lanka, but for any country in the world.

Taking a detailed look at Sri Lanka and comparing it with the mineral deposits of other countries, it seems that Sri Lanka for its size is extremely well endowed with gem deposits. Geologically the stretch from Jaffna to Puttalam region is sedimentary limestone terrain. The rest of the country which is about 90 per cent consist of what we call metamorphic rock, which has undergone change due to extreme pressure and temperatures. This section of the country is divided into four major divisions, viz the central part of the Highland Series, the South-West Group, the Eastern and the West Vijayan Complexes. (See Figure I) The Highland Series occupies the entire hill country of the Island. All the gem deposits known in this country are actually confined to this Highland terrain. If gems are found outside this terrain that may be due to it being transported by streams and rivers from the highland series. Theoretically anywhere within this region there is a possibility of finding gems. This area can stretch from the South to Polonnaruwa or further. This is due to its very special geological features, which appear to be just right for the formation of gems, particularly in the Southwest part where the crust has been well thickened. Further North this tendency may decrease but still gems can be found even beyond Elahera. This stretch which may be about 300 km is the stretch where Sri Lanka's gem stones are found. Dr. Karunatilake said all the varieties of gem stones that go to make other countries rich are in this region. Therefore, as far as gems are concerned Sri Lanka is the most dense gem bearing country in the world. It is virtually a gem mine at least in theoretical terms.

The Export Development Board funded my work at the University of Peradeniya to produce the Gem Deposits of Sri Lanka, Prospectors Guide map which shows the gem potential of Sri Lanka. (See Figure II) Based on the heavy mineral analyses carried out, the Island was classified into five major divisions depending on the abundance of gem minerals or indicator minerals. The areas were grouped as:

- I. — Highly Probable,
- II. — Probable,
- III. — Moderate,
- IV. — Poor,
- V. — No Deposits.

The first section (the horizontal striped patches) is an area worth exploring as the chances of finding a gem here are definitely greater than finding a gem in another area. When you produce maps like these, one can only talk about



the probabilities, as it is impossible to say whether one will definitely find a gem in the area. (In this map the rectangles are actually the topographic sheets). The surrounding vertical striped areas are less probable areas than the first section in finding gems. The areas around the existing Elahera region and peripheral regions are very rich in gem deposits and I must say that this area should have come under the first section. The third section which is the checked area is the more moderate area and the fourth section with broken lines is the area with a very low deposit of gems. The rest of the area beyond the highland series are the areas where one may not find any gem deposits.

Producing this map was interesting as it was done by actual research and not by using information already collected by others. We did our own stream sediment surveys, collected minerals from each of these areas and then analysed the heavy mineral for the percentages using what we call indicator minerals (such as spinels, and garnets).

The Table shows the areas in sq. miles of each of the topographic sheets in the gem-bearing terrains in Sri Lanka. The topographic sheets of Polonnaruwa, Nalanda, Elahera, Kurunegala right up to Ambalangoda were studied and divided into three groups viz. Highly probable, probable and moderate. All three groups are potentially gem bearing. We calculated the area as given in the map. For instance Polonnaruwa had 7.94 sq. miles of highly probable area. 21.87 sq. miles probable and about 14.91 sq. miles moderate. Rakwana for instance, had 367.0 sq. miles of highly probable and 100 sq. miles of probable. We totalled these figures and calculated the percentage of highly probable gem bearing areas relative to the total land area of the entire country. This was about 6 per cent. The area which is falling into the Probable Group is about 4 per cent and the moderate area is about 11 per cent, altogether more than 20 per cent, perhaps as much as 25 per cent. I would say that one fourth of Sri Lanka is potentially fairly good gem bearing land. No country in the world could say that one fourth of its entire land mass is gem bearing. Although other countries such as Brazil may have a larger area of gem bearing land being a large country. Sri Lanka has the highest density of gem bearing land which is about 25 per cent and it would be even more.

With respect to the future prospects for gem mining, using the map, the following areas need to be fully explored. Firstly, the peripheral areas of the existing gem mining areas. Perhaps areas like Elahera may have been fully exploited at least in certain areas, but areas around it are still potentially very good. Some of the research that has been carried out by my colleagues, my team and Dr. Rupasinghe from the Institute of Fundamental Studies (IFS), found that some of the areas which are fluoride-rich, that is rich in gases like fluorine for instance seem to indicate potentially gem bearing areas. Areas right round Elahera and the topaz regions, have fluoride bearing minerals and fluoride, which are good indicators of gem minerals. Similar characteristics are seen in the Hasalaka, Polonnaruwa, Rakwana, Ratnapura and Horana areas.



There is another interesting target area for gem exploration in the future which are the river mouths. Logically any river or stream that flows past the gem regions would have carried gem stones over the years. However, one should bear in mind that these streams have not followed the same course over the years as some may have got buried. One thing that can be done is to locate these buried river beds, with the possibility of using infra-red or thermal imagery satellites to try and locate some of these old stream beds. The setting up of the Gem Research Institute in the near future could undertake the task of identifying the structural features that seem to indicate good depositional sites for gem stones.

Coming to the question of diamonds there had been six or seven reported occurrences in Sri Lanka. Sri Lanka has approached the geological conditions that are very close to forming diamonds. The boundary between the Eastern region and the Highland series is one area which should be explored fully. The Geological Survey Department has actually ear-marked this area for detailed research. In particular the Koslanda Diyaluma region should be of great interest including the areas where serpentinites are found. These are the greenish coloured ultra basic rocks. Large rocks are to be found at Udawalawe, Ginigalpelessa and along the boundary. Some of these rocks may be found close to Seruvilla, Walipathanwela and Ussangoda. These areas are where one would eventually look for gems, where the source rocks are peridotites which may be a good source rock for diamonds. This is of course based on theoretical considerations.

Something which we must not forget is that all streams that go to the sea would have carried some of these valuable minerals. Thailand is now actually conducting offshore intensive gem mining in the Gulf of Thailand. Our ocean areas are much larger than the land mass of this country, which could be a gain for the future. It may be possible to try and explore the possibility of finding gems in the South West coastal regions where the rivers drain into the sea. The National Aquatic Resources Agency (NARA) officers told me that they have found interesting spinels off shore.

However as much as the gem deposits are actually a resource, one might say there is a greater resource which is the environment. We must not lose sight of this fact because like the Coal Power Plant there may be lot of unrest among the environmentalists. From the environment point of view there are disused pits that have not been re-filled. Rivers have been blocked and the sediment flows disrupted. Tanks and dams have been constructed. Large areas of excavations have destroyed vegetation.

The question of mechanised mining and refilling will come into the picture and the miners and the gem trade will have to give serious thought to this. One must not leave it to the Central Environmental Authority. The gem in-



dustry too will have to decide whether we have to stick to traditional methods or not. Thailand for instance, has large mines in the Shanthipur areas where mining is mechanised. Can we really do it? Is it worth the expense? These are the questions that will have to be answered by the gem industry and the Gem Research Institute.

In conclusion, I wish to state that what I have done is to give you an outline of what we have and what we might have and the importance of inventoring what we have.

#### GEM BEARING REGIONS OF SRI LANKA

<i>Topographic Sheet</i>	<i>Highly Probable</i>	<i>Probable</i>	<i>Moderate</i>
Polonnaruwa ..	7.94	21.87	14.91
Elahera ..	63.62	39.78	109.34
Nalanda ..	9.94	9.94	54.67
Kurunegala ..	9.94	7.94	7.94
Rangala ..	4.97	12.9	127.23
Maha Oya ..	—	—	29.8
Hanguranketa ..	—	—	157.23
Nilgala ..	14.91	14.91	79.52
Kandy ..	—	4.97	149.00
Gampaha ..	—	—	24.85
Avissawella ..	79.52	49.7	99.4
Hatton ..	11.8	39.78	59.64
Nuwara Eliya ..	—	49.7	168.9
Passara ..	36.78	49.7	74.55
Buttala ..	54.67	84.49	208.74
Haputale ..	71.57	139.16	129.22
Ratnapura ..	248.5	164.01	60.00
Panadūra Horana	119.28	64.6	34.75
Alutgama ..	49.7	29.82	198.8
Rakwana ..	367.78	100.00	4.97
Timbolketiya ..	79.52	129.22	159.00
Kataragama ..	14.9	39.76	59.64
Galle ..	0.994	9.94	79.52
Matara ..	—	19.88	29.82
Ambalantota ..	—	9.94	9.94
Morawaka ..	94.43	49.7	308.37
Alutgama ..	49.7	29.82	198.8
Ambalangoda ..	—	19.88	159.04
Total ..	1390.464	1191.41	3001.36

(All values in square miles)

(Total area of Sri Lanka 25299.202 Sq. miles)

(Area of a one inch sheet 472 Sq. miles)

Percentage Relative to Total land area	5.495%	4.709%	11.863%
---	--------	--------	---------



## SRI LANKA'S FAMOUS GEMSTONES

Location	Name	Gemstone	Weight in Carats
American Museum of Natural History, New York, Part of the J. Pierpont Morgan Collection	Star of India	Star sapphire	563
	Midnight Star	Deep purple star sapphire	116
	Pierpont Morgan Padparadscha	Padparadscha sapphire	100
		Large sapphire	163
		Yellow sapphire	100
The Hall of Gems at the Smithsonian Institute, National Museum of Natural History, Washington D.C. The gemstones are part of the National Gem Collection comprising more than 1,000 gemstones and reputed to be the finest public collection in the world.	The Maharani	Chrysoberyl cat's eye	58.20
	Logan Blue Sapphire	Blue sapphire	423
	Rosser Reaves Star Ruby	Reputed to be the largest and finest star ruby in the world	138.70
		Alexandrite	66
		Alexandrite exceptionally fine	43
British Museum of Natural History		Alexandrite exceptionally fine	27.50
		Cat's eye 37 mm diameter cut to show picture of an altar surmounted by a torch	500
	Hope Chrysoberyl	Absolutely flawless yellowish green chrysoberyl	45
State Gem Corporation, Colombo, Sri Lanka	Star of Lanka	Star Sapphire	363
		Cat's eye	103.05
Private collection in the United States	Blue Giant of the Orient	From 600 carats crystal found in Ratnapura in 1907	466
Private collection in the United Kingdom	Blue Delle of Asia	Found in Pelmadulla, Ratnapura District in 1926	400

(Source: Jewellery News Asia—May 1989)



Fig. 1

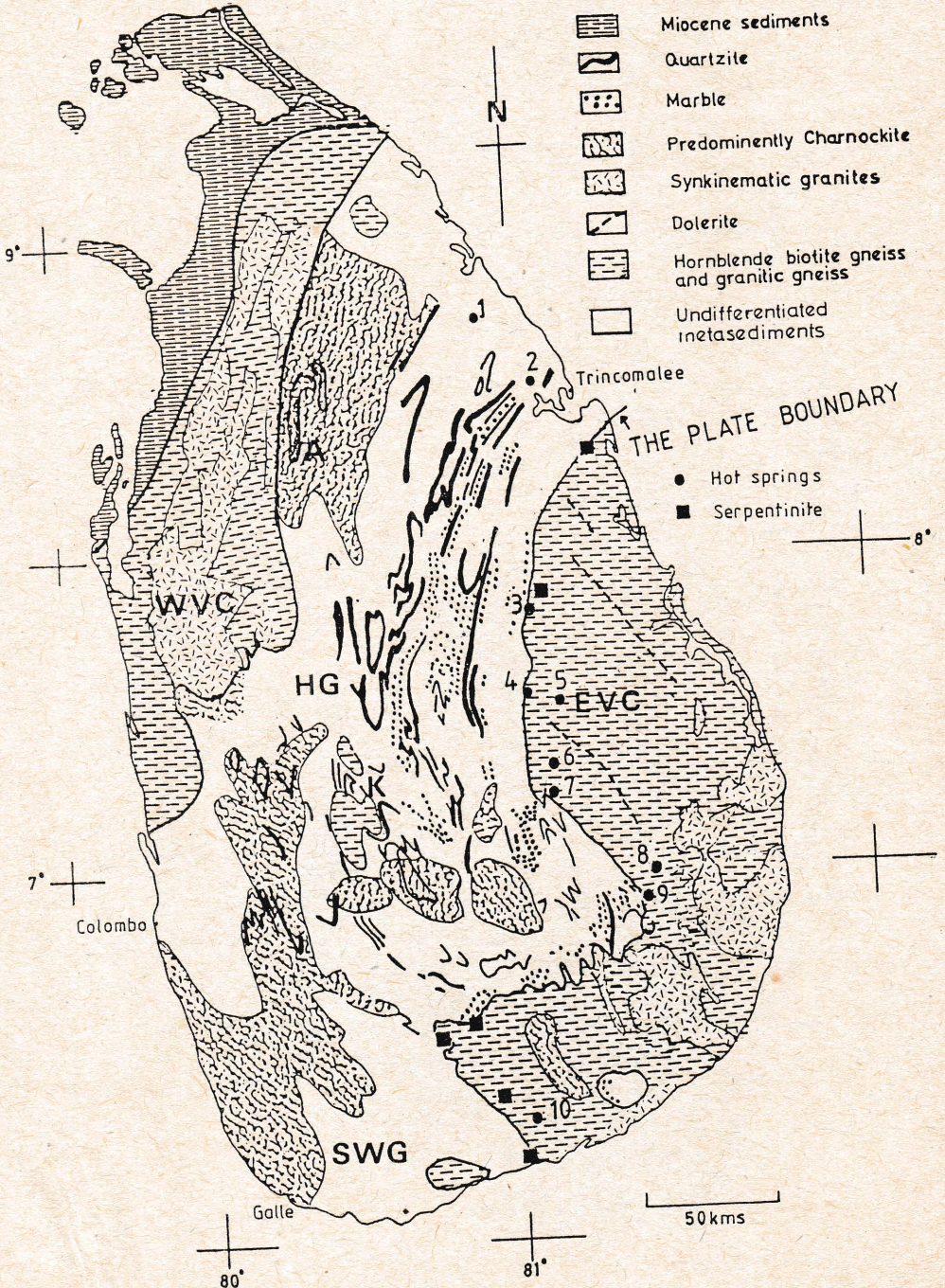
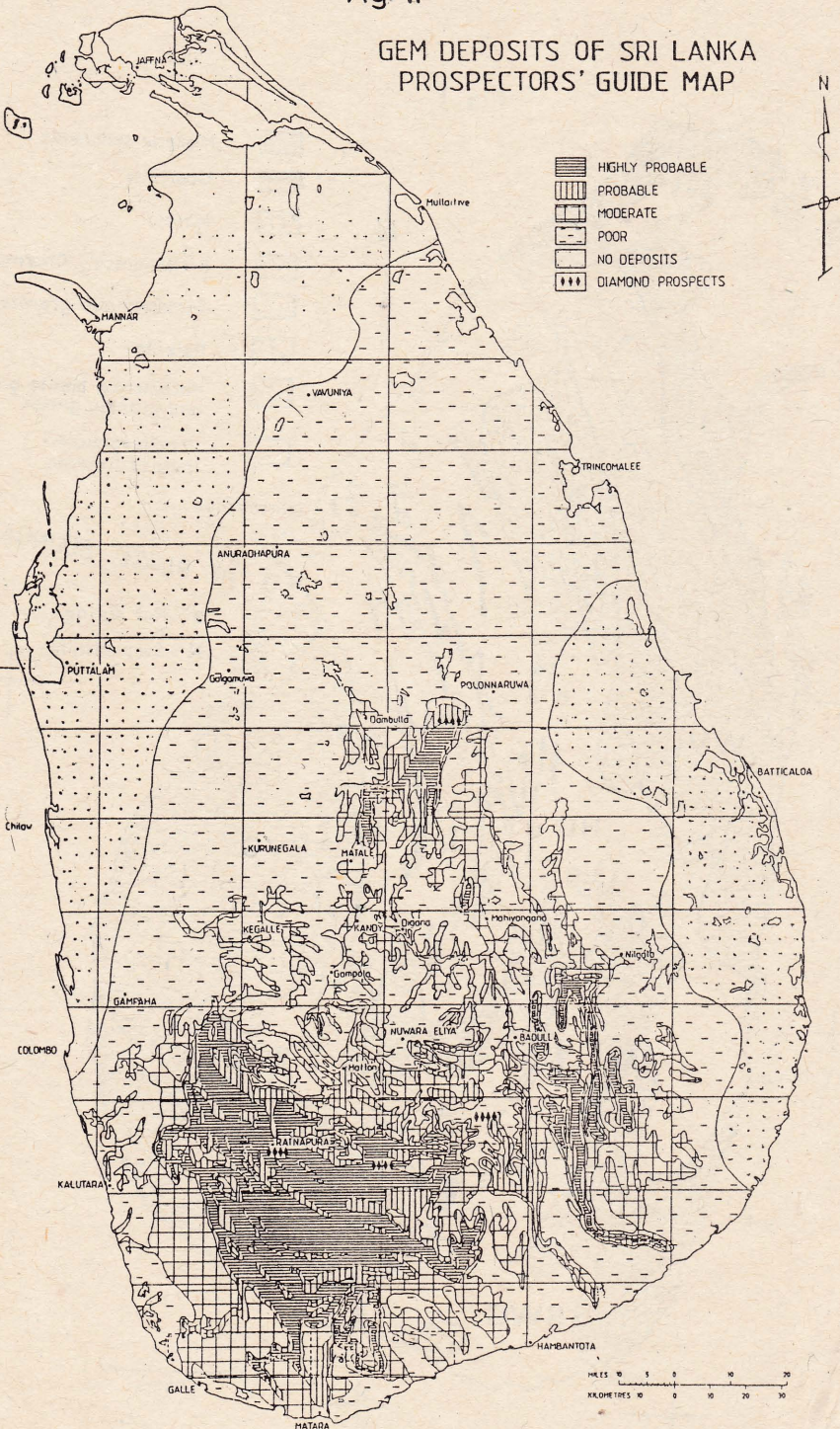




Fig. 11

# GEM DEPOSITS OF SRI LANKA PROSPECTORS' GUIDE MAP





# ENHANCING THE PRESENT GEM EXPORT POTENTIAL BY INCREASED VALUE ADDED

A. E. T. ELLAWALA

I must thank the sponsors and the Economic Association for giving me this opportunity to present a few of my experiences and knowledge on this occasion. The meaning of the word enhance according to the Oxford Dictionary, is to lift, raise, to highten, to intensify, to add, to increase and to raise in value. I prefer to use this word "enhance" as against the word "treatment" as treatment brings to mind a more negative image. In reality what we are talking about is treating the stones better to enhance the value and beauty.

This process of enhancement has been compared to a lady who makes up her face. She enhances strong points of her face to make herself look more attractive and the make up is accepted almost as a natural thing. Gemstones in the crystalline form have polished surfaces that are very beautiful. However, such perfect stones are rare and most of the gemstones found in Sri Lanka, even where they are not very worn show distorted growth or chipping around it. Other damage is caused by their movement by being carried by water to the flood plains where they are found.

Gemstones are enhanced by various processes. Cutting and polishing is one of them. The colour can be enhanced, reduced or clarified by various treatment. Different shapes are adopted to bring out the best features of the rough stones or to the best ratio of beauty to weight. The angles or size of the facets can be adjusted to heighten or lower the luster, colour or brilliance. Market trends can influence the popularity of different cuts and thereby the value of the stones. Enhancement is indeed a very fine art and if the right combination of the various methods mentioned is not achieved, then the value that the stone fetches in the market will not be the highest value.

The evolution of gem stone enhancement reveals that, figures, symbols or letters scratched on stones were the earliest methods used in decorating gem stones which were used as seals or amulets. These efforts led to the art of engraving and finally to the faceting of stones. The art of gemstone cutting is believed to have developed in India and started with the polishing of the



natural faces of the crystals. It is supposed that the well known diamond in Venice was faceted in 180 AD. The lapidary art is generally supposed to have developed in the 15th century. In the Western Hemisphere, the main centres of Amsterdam and Antwerp took to the cutting of diamonds while Idar/Oberstein in Germany developed the art of cutting coloured stones. This was mainly because Eda had large deposits of agate which they cut in many ways. The dyeing and staining of agate was also developed by them into a fine art. Agates were then cut by using either flat or curved slabs of hard sand stones. India remained the cutting centre for the Asian region.

The oldest mode of cutting that is used even today is the Caboshon. This shape is used for star stones and opaque stones which is gaining greater popularity today even for stones that normally are faceted. Carborandom powder which is Zilicon Carbide of various grip sizes were applied in the form of a slurry to revolving lead or iron plates and stones were ground to the desired size and shape on them. This method has now progressed to the use of fine grades of diamond powder bonded on to steel plates that revolve at high speed and on which the stones are very easily and quickly shaped. The use of diamond bonded plates made their entry into the Sri Lankan industry only a few years ago and has helped improve greatly the standards of cutting. The stone after it is shaped is faceted and the facets polished on a copper plate, again using finer grades of diamond powder.

Local cutters do not take care to give a very fine finish to our stones. The most common faults are shapes that are not properly balanced. That is rounds are not round. Ovals are egg shaped. What happens is that the girdle is very often lopsided and gives a very unbalanced look to the stone. Uneven facet meeting points if not properly finished leave a very untidy look on the stone. This is a very common feature that we see on our Sri Lankan stones.

We also have a very poor polish. The old method of polishing does not give the correct type of finish that is needed. There are nicks and chips that are not completely removed. Very often those close to the girdle are not removed. Many people when they find that they have reduced the flaw in the stone, find that the stone is losing size and colour. Therefore, they feel that leaving a little bit of the flaw, does not matter. They remove 90 per cent but leave 10 per cent. The buyer does not know that it is 10 per cent. To the buyer it is a 100 per cent flaw. He values the stone as a flaw, a point on which they can pay a little less. These are some of the major areas that need correction and if done well can lead to a price increase of at least 15 per cent.

These are common problems that we see in gem cutting today. I am happy to say that most of it is now being reduced but it is not enough. I have seen valuable stones which are so badly cut and I believe such cutters should be



branded as criminals because they are despoiling the beauty and immense wealth of our country. There are many shapes to which the gem stones are cut. In Sri Lanka up to very recent times, the rounds and ovals were the most common. Some of the other shapes of the facettled stones are emerald cut, heart shape, pears, drop pears or drop markies, baggage and tea cushion. Tea cushion is a very nice cut if given to stones. These are the cuts that are given to the diamonds. The pavillion is normally cut as a step cut stone. Most of our stones are step cut in this manner.

A recently developed cut that we find very attractive is the trillion cut. I believe this is a patented cut but there are quite a lot of this material. It gives a very powerful lustre, especially in the yellows and some times in the lighter shades of blue.

The Table presented here shows two different categories of gem stones. One is the high value gem stones that are treated as individual stones and cut or otherwise treated according to inherent merits in the stones. I would have preferred a better selection where the higher value stones are classified separately, into blue sapphire, ruby, padmaraga and alexandrites. The first two varieties are from the corandum family and the fourth one from the Alexandrite family, but they are all facettled stones. It can be seen that we have about seventy thousand carats of all these varieties with a total value of about Rupees 500 million. The second category is star-sapphires, which are also in the region of about 177,000 to 197,000 carats that are exported annually bringing in about Rupees 250 to 300 million.

There is a third category of the expensive stones which are catseyes. About 26,000 to 25,000 carats worth about Rs. 225 million are exported annually. The total value from these stones alone amounts to about Rs. 1000 million and the value added component is about 10-15 per cent. If the stone is treated or cut properly from the beginning, possibly this value adding component can be increased to 25 per cent to 30 per cent or even more.

There is also another category of stones. These are the cheaper sapphires. They sell for about Rs. 130/- up to Rs. 900/- according to last years prices and these stones were sold for Rs. 400/- - 500/- this year. Therefore, about 2,000 carats from this category bring in an income of about Rs. 125 million. These stones are cut into various odd shapes but what ought to be done is that they should be calibrated to the closest shape and size. This division though done in other countries for many years has only just started in this country and is in its infancy. It needs to be developed very rapidly. If the overall per carat value can be increased by even 20 per cent we would have an increase in net earnings of over Rs. 25 million. The fact that there are two categories in this sector of gem and precious stones and the third is the semi-precious, category of stones such as topaz, garnets, tourmaline, spinalls etc.



This provides the possibility of increasing income further. Topaz is being exported as calibrated stones. Since we started calibrating topaz the export value has increased from Rs. 26 million to 174 million in 1989. There is tremendous potential in this industry.

An importer had imported 1,047 kg of semi precious stones to the value of Rs. 6 million. He had sold the same consignment for Rs. 27 million after adding value. The recovery percentage of the cut and polished from rough ranges from 3 to 40 per cent but the value adding is 300 per cent. There is tremendous potential in adding value to imported material. The restrictions have been removed therefore it would result in more work for the lapidaries. We have to start importing rough material to add value to it.

There are other methods that are also adopted for enhancing the beauty or the value of the stones. Gem stone enhancement refers to the ways some gems are altered or treated to improve their appearance or durability. Guidelines given to the gem buying public in the United States of America are as follows. "You should ask whether a natural gem stone has been enhanced and if so whether the treatment is permanent and whether the treated stones require special care." Depending on the stone, enhancement may or may not affect its value. A common gem stone enhancement method is heating the gems in a special oven which is able to improve the colour and sometimes its clarity.

There are a variety of stones that can be improved by heat-treatment with different types of reaction. Particular interest to us is aquamarine. The green can be turned into blue, yellow to become colourless and orange into pink. Corundum blue sapphire is our major commodity. It can be darkened, lightened or asterism and colour can be added. Corundum that is colourless can be made yellow, green, or blue colour. Ruby also can be improved. Quartz, amethyst as well as smoky quartz, topaz, tourmaline, and zircon can all be treated. Geuda treatment is only one aspect or a small fragment of the industry.

Further, irradiation of gem stones can also add colour. It is done to colour diamonds and certain other stones. The colour of some of the stones will fade on exposure to light or colour may be attained in some and in some it may fail. You may have heard of how these stones are being irradiated at the Cancer Research Institute. They become yellow but on exposure to light they become pale and cause a lot of damage to our industry. Topaz can be irradiated and the colour improved. This is another area that we can step into if we do the colour irradiation in Sri Lanka instead of selling the calibrated stones to others to have them irradiated.

The other methods of enhancement are impregnation, bleaching in coloured oil, wax, plastic. The use of coloured oil has been a very common practice where emeralds and rubies are concerned in other countries and it is



TABLE I  
SRI LANKA EXPORTS OF HIGH VALUE GEMSTONES

Source: State Gem Corporation																			
Variety	1985			1986			1987			1988			1989						
	Carats	Value	Avg.	Carats	Value	Avg.	Carats	Value	Avg.	Carats	Value	Avg.	Carats	Value	Avg.				
CATEGORY I - A																			
Blue Sapphire	43.81	120.09	2.74	53.70	172.30	3.21	51.19	363.33	7.10	56.55	419.94	7.43	68.97	318.50	4.62				
Ruby	6.40	16.39	2.56	9.07	21.99	2.42	8.68	50.70	5.84	12.96	73.27	5.65	16.44	114.61	6.97				
Padmaraga	1.34	13.01	9.70	1.50	16.60	11.10	1.80	25.84	14.39	1.77	27.13	15.37	3.89	38.17	9.82				
Allexandrite	0.81	14.00	17.37	0.62	19.62	31.43	0.59	20.00	34.19	0.65	30.26	46.55	0.52	24.09	45.74				
TOTAL	52.36	163.48	3.12	64.88	230.50	3.55	62.26	459.87	7.39	71.92	550.60	7.66	89.82	495.38	5.52				
CATEGORY I - B																			
Star Sapphire	242.78	98.84	0.41	309.87	122.68	0.40	221.44	229.57	1.04	191.43	231.75	1.21	171.39	205.69	1.20				
Star Ruby	4.06	9.89	2.44	3.17	10.20	3.22	4.35	17.36	3.99	5.69	36.03	6.33	5.78	31.69	5.48				
TOTAL	246.84	108.73	0.44	313.04	132.88	0.42	225.79	246.93	1.09	197.12	267.78	1.36	177.17	237.38	1.34				
CATEGORY I - C																			
Cat's Eye	23.99	77.39	3.23	28.26	125.07	4.43	27.98	220.97	7.90	26.85	235.37	8.77	21.41	187.59	8.76				

Note : CATEGORY I - A : High Value Faceted Stones  
CATEGORY I - B : High Value Star Stones







also an accepted practice. Most small stones that have been exported by these countries have been oiled. We in Sri Lanka do not even dream of using oil. We did not know that our stones were oiled earlier and I am sure quite a lot of you would not have known either. Another method is surface modification to bring about composit gems. Opal is now becoming very scarce. A thin strip of opal is sandwiched between two hard materials to make a gem stone.

As mentioned earlier irradiation of topaz is another area that needs serious consideration. A recent issue of the Jewellery News Asia, carries a story of a Thai company that is irradiating topaz in collaboration with the Soviets. Further in April 1990 the Thais are supposed to have sent 100 kilos of topaz to London for irradiation using neutrant beams. These stones are cooled for six months and then irradiated to cis blue, with electron beams. The Thais are also experimenting to produce colours other than blue by the addition of chemicals during irradiation. If we are able to treat the stones we cut instead of selling them to others who get them treated, we should earn at least 100 per cent of the value of this material.

There is a Soviet-Thai venture to produce synthetic stones which are cut in Thailand. These are supposed to be cut to obtain five to three carat value addition, which are sold for 100 to 200 dollars per carat. The Thais sell 3000 carats of this material each month. An Australian company is marketing what you call the biron emerald which is obtained by purifying and recrystallising badly flawed natural emerald by a slow hydro-thermal process. They claim that the product has a life and intensity of colour matching the rarest of natural emeralds and carries a lifetime guarantee. A recent development is colour defugent. There is much talk today that white sapphires from Sri Lanka are being colour defused. When heated with colour inducing chemicals, the stones get coated with a layer of colour. The stones are repolished to correct the dulling that takes place during treatment. Compared with that of oiling with colourless or coloured oils, these stones are more durable, attractive and flawless. If this process of colour defusion is done with heat-treated stones that have a few specs or bands of colour within the stones the defusion becomes virtually undetectable. This is one area that needs very careful evaluation especially in the light of what happened to us with our geuda. Heat treatment is considered a natural process and the stones themselves are natural. These defused stones are also 100 per cent natural except for the little bit of colour that is added on.

We must keep in mind that we have natural stones in Sri Lanka which have colour only on the surface. The same thin surface coating of colour is there as in the defused stone and is locally called O2 or OP2. So when you take a colour defused stone and a local Sri Lankan natural stone there is very little difference between the two. As long as the stones are declared as colour defused it is not a unethical practice. It would be almost impossible to identify



or clarify the defusion if only a few facets at the pavillion of the defused material is left, because it reflects through the stone and creates the real colour and brilliance. This type of treatment can be a threat to Sri Lanka's natural stones, especially in the small calibrated sizes as was with heat-treated stones in the past and even now.

We have natural, synthetic and immitation stones. As their names indicate, natural stones are found in nature. Synthetic stones are made in a laboratory except for their origin. The synthetics are essentially the same as natural stones in their composition and properties, such as hardness and brilliance. By contrast immitation stones only resemble natural stones in appearance. They may be of glass, plastic or less costly stones. The US Federal Trade Commission guidelines state that the synthetic or immitation stones cannot be offered for sale without disclosing that it is not natural. For example a ruby made in a laboratory having the same composition as a natural stone must be described as synthetic created laboratory grown or man made. similarly, a stone that does not have the same composition as the natural stones must be described as immitation or with a similar word. In either case consumers must be clearly informed if the stone is not natural. My personal view is that if any of these processes can create jobs and earn income for our country we should make use of that. However, the product must be clearly defined or described. If we do otherwise we are deceiving the customer and the punishment for fraud should apply.

Now I have actually diverted a little in bringing synthetics in and other material. In view of the fact that there is a tremendous potential for jobs in these areas, I have included this in my talk. When stones are set in jewellery the value increases further. Therefore, the jewellery industry also can develop if we have the correctly enhanced stones in our country.



# POTENTIAL FOR MOBILIZATION OF RESOURCES THROUGH THE DEVELOPMENT OF THE GEM INDUSTRY

N. L. SIRISENA

## INTRODUCTION

SRI LANKA is one of the important gem bearing lands in the world and the history of the gem industry of the country extends to the days that Sri Lanka became a human civilization. Although the gem industry in Sri Lanka has such a long history extending over 2000 years, it is essential to recognize that the industry is still at a primary stage. Gem mining is done in the traditional manner while the economic conditions of the miners are still unsatisfactory. The gem processing done in Sri Lanka is of a limited nature and the raw material available to lapidaries from the country's gem industry is limited as most of the gems are exported in rough form. The geuda heat treatment technology which has been well developed in Thailand for a number of years is only now being mastered in Sri Lanka. However, anyone who had evaluated the feasible development possibilities in Sri Lanka would certainly recommend the development of the gem industry as a strategic sector for the development of the economy.

In this paper, the first section briefly deals with the potential of the gem industry. In the second section, the major constraints on the growth of the gem industry are identified. The third section is devoted to a discussion of strategies and policies which are needed to be implemented to promote a dynamic gem industry in Sri Lanka.

## Potential of the Gem Industry

The value of official gem exports from Sri Lanka in 1989 was in Special Drawing Rights (SDR) 47.7 million or Rs. 2,204 million which was only 3.9 per cent of the total foreign exchange earnings of the country. In terms of contribution to Gross Domestic Product (GDP), this was only about 1 per cent of value added in the same year (See Table 1).



Table 1

## OFFICIAL GEM EXPORTS

Year	Rs. Mn.	In SDR Mn.	Rupee Value as % of GDP	Annual % Change of SDR Value	% of Total Exports
1970	4	0.72	0.03	—	0.20
1971	3	0.55	0.03	—24	0.15
1972	12	1.84	0.09	235	0.60
1973	141	18.53	0.92	907	5.39
1974	109	13.69	0.55	—26	3.14
1975	180	21.35	0.82	56	4.58
1976	261	26.87	1.08	26	5.42
1977	254	25.0	0.73	—6	3.90
1978	525	27.12	1.30	8	4.00
1979	494	25.0	1.00	— 8	3.20
1980	664	31.0	1.07	16	3.80
1981	632	28.0	0.80	— 9	3.10
1982	685	29.8	0.72	6	3.20
1983	940	37.4	0.83	25	3.70
1984	617	23.64	0.44	—37	1.70
1985	561	20.3	0.37	—14	1.50
1986	755	23.0	0.46	13	2.20
1987	1,447	38.0	0.81	65	3.50
1988	2,070	48.4	1.02	27	4.40
1989	2,204	47.7	1.00	— 1	3.90

Source : Central Bank of Sri Lanka, Annual Report



The total employment in the gem industry has been estimated at 174,000 persons in 1985 as shown in Table 2. The employment situation shown in Table 2 would not have changed much during the last 4 years.

**Table 2**  
**Estimated Employment in the Gem and Jewellery Industry**

			<i>No. of Persons</i>
1. Mining			
Licensed Miners	..	48,000	
Illicit Miners	..	48,000	
Supporting Workers	..	5,000	
(Timber supply, water pumps, etc.)	..		101,000
2. Licensed Gem Dealers	..	2,500	
Assistants	..	12,500	15,000
3. Unlicensed (Mobile/Traveller Gem Dealers)			45,000
4. Lapidary Workers			6,000*
5. Jewellery Manufacturers mainly connected with Gem Industry			1,000*
6. Other Jewellery Manufacturers			6,000
			174,000

*Source :* Report of the Parliamentary Sub-Committee on Gem Industry  
—September 1986 (unpublished)

*Note :* \*Sub-sectors which have the largest employment potential.

The potential of the gem industry in Sri Lanka can be considered under a number of scenarios. One scenario would be where unofficial gem exports have been eliminated or reduced substantially. Such an exercise would mainly show its contributions to the balance of payments and to the GDP. Assuming that the present official value of gem exports is about one third of all gems exported in the event of smuggled gems being brought under official exports, the export value of gems would probably be in the range of SDR 150 million. Once the official export values of gems are accurately recorded the value added contribution of the gem industry would be adjusted upwards by about Rs. 6,000 million and consequently GDP would show a higher rate of growth<sup>1</sup>.

1. The policy options available for the realization of potentials of this scenario are not discussed in this paper. The assumption is that through policies proposed for the implementation of the second scenario, the factors that encourage unofficial exports would become ineffective and hence, the environment conducive to smuggling of gems out of the country would disappear. Other supplementary macro policy measures too would be needed.



The second scenario would be to evaluate the development potentials of the gem industry which assumes a broad base development of the industry. This would involve, the expansion in mining and gem processing, heat treatment and lapidary work and more marketing activities within and outside Sri Lanka. Unless smuggling is reduced considerably, the realization of the second scenario would be difficult in view of the close inter-dependence between the availability of gems for processing locally and the level of smuggling gems out of the country. In other words, the policy issue that emerges is that elimination of smuggling is essential for a broad based development of the gem industry in Sri Lanka. Under scenario 2, the realization targets in a period of three years may be as follows:-

(a) Earnings	SDR 150 Million
(b) Contribution to GDP	Rs. 6,000 Million per year
(c) Direct employment (addl.) in 3 years	200,000 persons

In the long run, in about 6 years, the following increases may be realized:-

(a) Export earnings	: SDR 250 million
(b) Contributions to GDP	: Rs. 10,000 million per year
(c) Addl. direct employment	: 500,000 persons.

The realization of these targets would depend on the implementation of a comprehensive policy package. The main ingredients of such a package are discussed later in this paper. In the ensuing section, we shall discuss the main constraints which seem to inhibit the development of the gem industry.

### Major Constraints on the Growth of the Gem Industry

The discussion given in Part I indicates that the gem industry has considerable potential for growth and development. However, there are considerable binding constraints operating in the industry. Some of the constraints appear to be technological while others are institutional and economic. One may argue that if the institutional and economic constraints could be overcome, finding solutions to technological problems would not be difficult. In other words, the binding constraints are institutional and economic rather than technological. The technological gap that exists between Sri Lanka and its immediate competitor Thailand, has already been narrowed and could eventually disappear, probably within two or three years if appropriate policy measures could be implemented. However, it needs cautioning that the speed of implementing policies in Sri Lanka has been conspicuously slow in the past.



In 1984, when the Parliamentary Committee on the gem industry examined the problems of the industry, it was noted that there was a considerable gap in the technological knowhow of heat treatment of geuda stones. However, in February 1989 the papers presented at a Workshop on the gem industry revealed that,

“the problem of geuda treatment lies not in the technology of heat treatment which has now being mastered in Sri Lanka, but rather in the identification of geudas suitable for different types of heat treatment. . . . More work would appear to be necessary in order to make the system of identification of stones more scientific. For instance, the manner in which the colouring elements are distributed and oriented in relation to the crystallographic pattern of the host, needs greater consideration”<sup>2</sup>.

In addition to finding satisfactory solutions to these remaining technological problems of heat treatment, there are other problems constraining the development of the lapidary industry. “Though Sri Lanka has many varieties of fine gem material it does not produce any material except corundum, garnet and topaz in volumes sufficient to sustain a cutting industry. In order to become a full-fledged world gem centre, Sri Lanka must be able to offer international buyers a wide range of gem stones”<sup>3</sup>. In addition, it has been said that the potential entrepreneurs often have inadequate knowledge of gem-mology and lapidary work. However, this short coming could be overcome through training schemes within a period of about a year.

Inadequate availability of credit facilities is another major problem of the lapidary sector as well as of the other activities associated with the gem industry. The financial requirements needed to maintain a chain of economic activities involving heat treatment, cutting of gems and stocking them upto the time of marketing is considerable. However, the financial institutions in the country are reluctant to grant credit to the gem industry because there are uncertainties with regard to output i.e., whether the heat treatment would be successful to fetch the expected prices. In addition, banks are used to securities such as mortgages and stock-in-trade in business enterprises. However, the stock-in-trade in the gem industry which are gems, often in rough form, are not the usual type of collateral accepted by banks<sup>4</sup>.

The international market for gems and jewellery products as well as for gem based handicrafts and souvenirs are very considerable, involving billions of US Dollars. The international gem markets in countries such as Germany,

---

2. Ediriweera, R. N., Heat Treating Geuda Gemstones

3. Ellawala, E. T., Lapidary Development

4. Fernando, E. T. N., Role of Commercial Banks in the financing of the Gem Industry in Sri Lanka.



Hong Kong, India, Japan, Switzerland and Thailand are being serviced by a large number of international gem merchants for the benefit of customers in various parts of the world. However, the international market potential of the gem industry is known only to a few in Sri Lanka. The absence of an institutional mechanism to provide information about the existing and potential markets has compounded the imperfect market knowledge of Sri Lankan gem merchants.

The promotion of Sri Lanka as an international gem marketing centre is one way of providing greater marketing opportunities and knowledge. In addition, the task of providing information about markets could be done through publications in periodicals and news digests, by holding exhibitions and having a permanent market centre for gems and jewellery and other gem based products.

### **Policy Framework to Promote the Growth of the Gem Industry**

In the previous section, it was noted that Sri Lanka has the potential to realize a significantly higher level of economic development through the development of the gem industry. At present the gem industry is one of the most neglected sectors in the economy. The institutional and policy support it receives are negligible. In addition, the gem industry is clearly the most distorted sector in the economy. Gems are being exported unofficially in large volumes. The value of the gems smuggled out of the country are considered several times the official export figures. Lack of policy support as well as the distortions in the industry have contributed to the under developed status of the industry. However, as we noted earlier the potential for enhancing the foreign exchange earnings, employment and the economic development of the country are considerable. The policy framework we suggest here is aimed at solving the basic problems of the gem industry, namely;

- i. inadequate policy support,
- ii. inadequate investments in infra-structure development,
- iii. absence of a market promotional mechanism, and
- iv. lack of credit facilities to gem sector related industries.

Sri Lanka should decide to make the gem industry a central focus of a large number of economic activities including the tourist industry, jewellery manufacturing, handicrafts and souvenir making industries. As a device of promoting growth in all these industries, the authorities should consider establishing a Gem and Jewellery Exchange of international standard. The objective of the Gem and Jewellery Exchange should be the promotion of inter-



national gem marketing in Sri Lanka. The Government should consider providing the infra-structure needed for this large scale international gem trading centre. A permanent gem museum, exhibition and conference halls with facilities, should be maintained by the public authorities while the private sector should be provided with shops to display and sell their products. Once such a large gem and jewellery shopping complex is established in Colombo, a good proportion of smuggling of gems is likely to be absorbed by this trading centre since the main reason for smuggling of gems today is the absence of a competitive gem market in Sri Lanka. The Gem and Jewellery Exchange should be of the stature which can attract international gem buyers to Sri Lanka. The Gem and Jewellery Exchange, while offering the buyers with a wide range of gems and gem products should also provide facilities to export what has been purchased. The organisation of annual exhibitions and engaging in other market promotional activities such as international exhibitions should be undertaken by the Gem and Jewellery Exchange.

The principal concept behind the proposals to establish a Gem and Jewellery Exchange is the promotion of the gem industry through market development. As one would have noted from the earlier discussion, the liberalization of import and export of gems and jewellery is a basic requirement for market promotion. Similarly, making available facilities such as an Assay Office for the valuation of gems and jewellery and offices to deal with foreign exchange and customs formalities are necessary.

At present research work on the gem industry are undertaken in various institutions due to the interest of individuals. However, a gem research organisation of a significant size is absent in Sri Lanka. Moreover, there is no single body to coordinate the scattered research efforts, including research work on geuda heat treatment. Therefore, another basic need of the gem industry is a central research organisation to undertake and promote research not only on geuda heat treatment but also on a wide range of fields relevant to the gem industry. While the findings of the research work should be made available to the industry, the industry itself should be able to solve its technological problems through the research organisation. The training of manpower should be organised and coordinated by the Gem Research and Training Institute. The training of skilled manpower needed for heat treatment, gem cutting, other lapidary work and jewellery designing and manufacturing as well as the training of semi-skilled labour needed for gem and jewellery making should be another objective of the Gem Research and Training Institute. In the area of research and development as well as in training, the public sector investment and direct involvement in providing guidance is essential.

The credit needs of the private sector entrepreneurs in the gem industry are hardly being met by the banking system of the country. At present the gem industry is largely a self financing sector. However, if new economic activities are to be established in heat treatment, lapidary and jewellery manu-



facturing, substantial financial commitments are required. The banking system which evaluates the credit needs of projects on the traditional collateral evaluation basis has not come forward in providing credit to the gem industry. The special nature of the collaterals that the gem industrialist can offer, namely gems should be recognised. However, gem valuers are not available in large numbers in Sri Lanka. Due to this special problem of valuing gems and the absence of an adequate number of competent valuers, a credit guarantee fund should be created to give credit guarantee certificates to lending institutions on behalf of the borrowers. The fund should employ the available limited number of valuers to determine the credit worthiness of the borrowers.

The credit needs of gem industrialists are basically of two types. The medium term credit is needed to finance the stocks of rough gem stones which are needed for heat treatment and processing at lapidaries and such credits are generally needed for a period of about 12 to 18 months. The long term finances which are needed for meeting the infrastructure costs are generally made available by the gem industrialists themselves, although occasionally some credit needs may arise which deserve to be financed through the banking system.

While stressing the need to develop the gem industry in Sri Lanka through a major investment programme and institutional support, it is also necessary to stress the importance of regulating gem mining for economic and environmental reasons. The gem resources are non-renewable natural resources of the country. The mining of gems should be done in a scientific manner not to permit over-exploitation which entails the risks of major environmental and ecological hazards to the country. Already, environmental hazards are created by illegal gem miners. Regulating gem mining, along with a number of other policy issues should be handled by a national authority in charge of the gem industry. In other words, the need for creating a National Gem Authority is critically important.

In conclusion it may be stressed that the value added potential of the gem industry is very considerable in a number of aspects. *Firstly*, a large number of forward linked industries can be developed; heat treatment, lapidary, jewellery souvenirs, handicrafts, etc., can use raw materials of the main gem mining industry. *Secondly*, since value added in each of these industries are very substantial economic development can be enhanced considerably. The application of heat treatment technology has the potential to increase the value added by 6 to 10 times. The calibrating and processing of gem stones through various other technologies, increases the value of gems by a multiplier of two to three. Embodiment of semi-precious stones in jewellery and souvenirs enhances the value of the products very significantly. In short, compared to the value added ratios in most other economic activities, the value added ratios in gem and the gem related industries are substantially higher. From the point of view of economic development this is a very significant factor as the growth of the gem industry could enhance the economic growth of the country considerably. In other words, deepening and expansion of the gem industry could provide a viable strategy for economic development in Sri Lanka.



# IMPROVING THE PRESENT GEMS AND JEWELLERY INDUSTRY POLICIES AND MEASURES

A. M. M. SAHABDEEN

A gem industrialist once remarked that "as long as there are women in the world there will always be a place for a thriving gem industry in the economy". Perhaps the English Poet, Thomas Gray had full knowledge of women's enchantment with jewellery, when he wrote "what female heart can gold despise?" What cat is averse to fish?. Since gems and jewels have a very high value, they can be faked easily. Hence, it is said that "not all that glitters is gold". Gems are also a common metaphor in the culture of mankind. Certain things that are sacred are described in the names of gems, for example the blessings of the "Triple gem" etc. In our folklore, we have heard of king cobras guarding treasure troves. I disbelieved this story till I read an article in a magazine which says; "Deadly protection for valuable gems seems to be leading in popularity". Cobra protection has been tried in more than one instance in recent times. I cannot vouch for the authenticity of it but the source is the Journal on Gem Industry, September/October 1981. All this is due to the fact that gems are nature's gift to mankind, extremely valuable, rare and precious. They can be fully exploited for the benefit of mankind, if the proper policies are formulated by the government and the industry.

Most of the speakers referred to gem smuggling. There is absolutely no doubt that gems are smuggled. This is an evil as widely prevalent as under-invoicing and over-invoicing of imports/exports. While the main focus is on gem smuggling, although I am not defending it, I will try to evaluate a problem or place a problem in its perspective. How many millions of rupees are smuggled out in a year through under-invoicing or over-invoicing?. This is part and parcel of the commercial evils of especially developing countries. Since there seems to be almost a kind of obsession about this phenomenon of smuggling it is time for us to ask the important question of how to stop it or how best we can stop it. Why do people smuggle? or who smuggles? Is it the Sri Lankans who smuggle or the buyer abroad?.



There are certain peculiarities about this trade which must be fully understood. That is, this trade demands absolute secrecy for many reasons. A foreign buyer, buying very rare and precious stones for which he pays something like Rupees 5-10 million would first be concerned with his own security of whether he would be killed. He may also have very good reasons to get it across to say Thailand, Hong Kong or Japan. He may have very good reasons to treat it as a secret transaction because it is something very valuable and its security is very risky. As far as we are concerned, we should not worry as to how the gems leave the island so long as we get the foreign exchange that is legitimately ours. This should be the main focus of attention. How can we ensure complete security and secrecy to buyers abroad, which is a matter worth considering?

Let us agree on some basic facts, that there is and there will continue to be unofficial exports. What is the nature of the problem? I will quote Dr. Karunatileke, from an article in the Economic Journal of April 1987 where he refers to unofficial gem exports in these words, "The most significant feature in the Sri Lanka economy after 1977 has been a phenomenal decline in earnings from gem exports. Exports have fallen from 531 million in 1977 to 400 million in 1985. The figure for 1985 and the preceding six years are heavily inflated due to devaluation". He further states that "Sri Lanka is not getting the benefits of its own gem industry as it is losing enormous amounts of foreign exchange while at the same time, generating a lot of black money. Sri Lankan gem trade has been controlled and dominated by Thai merchants lock stock and barrel". Then he proceeds in the same article to say that "there must be at least on a very conservative estimate, Rs. 33 million or its equivalent value in foreign exchange stocked abroad and that this could be attracted back to Sri Lanka if proper policies are formulated"

Since the above figures are based on some kind of empirical data the point for consideration is how can we get this money back?. This is based on the assumption that the holders of this money are all Sri Lankans. I am not very sure but assuming that at least part of it is held by Sri Lankans, how can we get this money back?. This raises other questions. What steps should be taken to stop unofficial exports?. What are the policies and measures that should be adopted to build a viable gem industry?. How can we get the potential or have we got the potential to build up such a prosperous industry?. I was quite impressed by all what Dr. Sirisena said. He refers to the number of measures which the EDB has adopted to improve this industry.

I will answer the last question which was whether we have the potential to build up such a prosperous industry?. To answer that question I will refer to an article in the Annual Report of 1986/87 of the Gems and Jewellery Export Promotion Council in India because I find that the various factors, circum-



stances prevalent there are very much similar to circumstances prevalent here. India recorded a phenomenal increase. Absolutely phenomenal during the last 6 or 7 years in the export of gems and jewellery. I will quote: "It is indeed hard to observe that exports of gems and jewellery items registered an all time record of 2000 crores during 1986/87 as compared to 1500 crores in 1985/86, an increase of 41.4 percent. From the modest beginning of 22 Crores in 1966 the year of inception of the Council, exports of Rs. 2130 Crores mark nearly a hundred fold increase in turn over". Perhaps a record for any export sector. Gems and jewellery exports amounted to 16.9 percent of the country's total export earnings, estimated at 12,550 crores during 1986/87.

I am not saying that a small country like Sri Lanka can reach the targets of a great neighbour which has tremendous resources of materials, manpower and experience. However, judging by the performance in garment exports we can come somewhere near India's exports of gems and jewellery, at least in the near future. I say this because we have the mineral resource base and highly skilled and motivated manpower of thousands of young men and women with a fairly good educational background who could be trained in the skills required by the gem industry.

Without going into the technicalities I want to identify four aspects of the industry. These are the calibrated stone industry, the traditional free size gem stone industry, the diamond cutting industry and the jewellery manufacturing industry. For centuries, Sri Lanka has been known for its traditional exports of free size gems and it is commonly acknowledged that she is one of the most important gem producing countries in the world. As Professor Dissanayake said the enormous resources that the country has must be exploited to its maximum limit. The pride of Sri Lanka has been its sapphires, cats-eyes, alexandrites etc.,

It is heartening to note that the government has liberalised imports of calibrated stones and I hope in the near future we could get a fair share of the US Dollars 20,000 million world trade. If we can get even 5 per cent of that trade, it is an enormous amount of money. With regard to the traditional export of precious stones the main snag seems to be the lack of adequate scientific information and an updated scientific survey of our mineral resources. Prof. Dissanayake mentioned that very soon we should be able to get very accurate data on our mineral resources.

The jewellery industry too has vast potential. The main constraint in this industry is gold. There are so many bottle necks, bureaucratic delays and procedures to obtain gold. However, it is very strange that if one goes to Sea Street one can buy tons of gold. To a bona fide jeweller obtaining gold is a very big problem and I am informed that government is reluctant to liberalise



the import of gold because such a liberalisation could be abused and that same gold can be smuggled back to India. Just as Dr. Sirisena said "because there are one or two thieves, why penalise so many bona fide jewellers and industrialists?". Why not allow a percentage of foreign earnings of jeweller or a gem merchant to be used to freely import the gold necessary for that industry?. I really do not know why this has not been done. What are the difficulties in doing it?. If a jeweller or a gem merchant has produced statistics that he had exported Rupees 10 million worth of ready made jewellery, why not allow him 25 per cent or 50 per cent of it to buy his requirements of gold. I understand that such a scheme is recommended and I am very glad about it. Let us hope that such a scheme will overcome that particular constraint.

Another constraint in the jewellery industry is the rather primitive technology that we have. The jewellery industry has become highly sophisticated as it now makes use of much machinery, new techniques and instruments. Therefore, some kind of foreign training is very necessary and the proposed Gem and Jewellery Authority could look into this aspect of training.

There is another emerging industry which has a very bright future which is costume jewellery and non gold jewellery. Due to the high cost of gold and diamonds and the security risk involved, there is now a huge market for imitation jewellery and non gold jewellery in the world. This is a lucrative field worth exploring since it is not very capital intensive. A large number of small scale entrepreneurs could develop this industry.

It is absolutely clear that there is vast potential for a well planned gem industry. If India could aim at 100 billion exports for 1990 we could at least in the long run expect to reach one tenth of it which is 10 billion. In the near future, this would be possible if sensible and meaningful steps are taken. Amongst the urgent measures necessary are the liberalisation of import of gold and rough stones, as well as provision of technological training. These are all controllable problems. However, the two most important steps that should receive high priority are the establishment of the Gem Trade Financing Bank and aggressive marketing. I am very glad that the legislation at least for the bank is in the process of being prepared. This should solve some but not all of the problems as the industry is highly capital intensive.

Today a merchant who has to hold a stock of 1000 carats of blue sapphires needs at least Rs. 10 million assuming an average of Rs. 100,000 per carat. In order to call oneself a gem merchant and project oneself as an exporter to a foreign buyer one has to hold at least about 5000 to 6000 carats of blue sapphires alexandrites etc. Therefore, the capital requirement is enormous. This is also an area that can be abused. The gem exporter can use all kinds of in-



fluence to pressurise the banks to obtain cheap credit and the Gem Bank that is going to be set up would have to take very risky decisions. More than the seed capital required for this bank, it is the personnel who will man the bank that is of importance. What sort of people are going to take executive decisions in the bank?. This is a matter which the EDB must consider very carefully.

I do not foresee an easy future for that bank, but there is nothing impossible. Other countries are doing it. In Thailand, the success of the Thai gem industry is due to the assistance received from the banks i.e. cheap credit and as much credit as the industrialists want. Thailand has done it and so has Belgium and Switzerland. Therefore, why cannot we do it?. It is a manageable and controllable exercise. However, we have to approach it with extreme caution especially during the earlier years. I remember when the State Gem Corporation was set up there was much hope. It was hoped that the Gem Corporation would completely stop smuggling by purchasing stones and be profitable as well. However, we know that later on the Gem Corporation became more a regulatory body while direct involvement in the trade reduced as time went on. Therefore, due to this experience we have to approach this problem with caution. The setting up of a bank unless manned by highly competent staff of unquestionable integrity would not be able to achieve the desired objectives in the near future.

In order to develop the gem industry, Sri Lanka has to become something like a one stop shop to a foreign buyer. You do not expect a person to come all the way from New York, Paris or Berlin, just to buy one or two blue sapphires. When he makes a long trip he would like to have a variety of merchandise such as blue sapphires, alexandrites, well-cut diamonds and perhaps very good jewellery. To make his long trip worthwhile, all these must be made available. This I understand is the success of Bangkok. One gets anything one wants there, in any quantity and in any variety.

We should have a broad perspective in building up this industry in the future. In order to make Sri Lanka a one stop shop we need capital and once again we come back to the same problem. The availability of cheap finance and aggressive marketing which involves international publicity are essential. Which comes first of the two?. It is finance. Honestly speaking, how many Sri Lankans can boast of a capital of one hundred million rupees in liquid cash to make this trade a success? What is one hundred million of our Sri Lankan rupees in terms of foreign exchange? How many of us have it? Therefore, the banks must come to the rescue of the bona fide entrepreneurs in this industry. Therefore the Gem Trading Bank is the solution to the first problem of financing.



Of course there are other problems. Such as whether all the gem industrialists or the traders have the necessary collateral? Very few have very valuable land. Obviously the credit has to be made available against the security of stock in trade. There must be very competent valuers and they not only should have technical competence but integrity as well.

The last comment I have to make is that unlike any other trade this is a highly personalised trade. It is not like selling Mercedes Benz cars from an open showroom. Their standard is known. Prices are known and everybody knows everything about the commodity. However, this trade has its own peculiarity. It is based on trust. For example Mr. X likes to buy from Mr. Y for the main reason that Mr. X trusts Mr. Y. This is highly personalised. This is not something which easily lends itself to a bureaucratic organization or that kind of structure. It is a personal relationship the exporter develops with the importer. That has been the traditional pattern of the trade and in the earlier years received good dividends. There was no problem of smuggling during those days. The smuggling problem arose only during recent years when the value of our exchange dropped and when foreigners came into the picture. When the genuine Sri Lankan merchants exported gems they were hardly engaged in any smuggling. I do not want to name any firm, all of you know and some of the firms which claim 100-200 years of tradition in this trade were all based on absolute trust. I think its time that we revive those traditions because Sri Lanka became world famous because of those traditions.



# GEM EXPORTS IN SRI LANKA\*

VINCENT MERVYN FERNANDO

## Introduction

For a small Country, Sri Lanka has an abundance of precious and semi-precious stones of different varieties. In addition, Sri Lanka is considered as one of the five most important gem bearing areas in the world.<sup>1</sup>

In Sri Lanka, gems are classified as non-traditional exports. The country's exports of gems are less than one per cent of the world gem exports. It faces keen competition, from some of the countries within the Asian Region, it self particularly from India, Thailand, Burma and Pakistan.

Recent history of the gem exports in Sri Lanka may be discussed under three main periods, namely; before and after the setting up of the State Gem Corporation in 1971 and the period in which a policy of free exports was implemented, i.e. in 1977. The purpose of this article, is to review the recent trends in gem exports in Sri Lanka, particularly in the 1972-1990 period. The structure of this paper is as follows. Section 1 briefly reviews the historical background of the gem industry and main gem varieties in Sri Lanka. Section 2 considers the recent trends in the export of gems. In Section 3, the direction of gem exports during the period under review, is discussed. Summary and Conclusions are given in Section 4.

## Historical Background of the Gem Industry in Sri Lanka

The country has long been renowned for its gems and the industry dates back to very ancient times. Reference had been made in the scriptures to gems being carried from Sri Lanka to the Court of King Solomon. The "Mahawansa"

---

1. South Africa, South America, Burma and Thailand are other most important gem bearing areas in the world.

\* This article was not available for the Seminar.



refers to the reputation of the island for its gems. Greek writers of the first and second centuries had made reference to gems in Sri Lanka. The Arabs who were known as our trading partners in the fourth and fifth centuries and then the Persians exercised a considerable influence over the trade of Sri Lanka up to about eleventh century. The Arabs were attracted mainly by gems to the island of "Serendib" by which name Sri Lanka was known to them. Recent history of Sri Lanka reveals that gems had been an important commodity of trade during the periods of the Portuguese, Dutch and British. Up to recent times, the best known gem-bearing area was the province of Sabaragamuwa particularly the villages of Ratnapura, Balangoda, Eheliyagoda and Rakwana. About 80 per cent of the chief gemming fields of the country are found in these provinces. Outside these areas, extensive gemming has been carried out mainly in the villages of Hiniduma, Deniyaya and Morawaka in the Southern Province; Elahera in the Central Province; and Okkam-pitiya in the Uva Province while some gems have also been found in the Nuwara-Eliya, Horton Plains, Maskeliya and Kandy areas.

Sri Lanka's gem mining can be broadly classified as large open pit deep mining (Pathal)<sup>2</sup>; Tunnel mining (Dona Pathal)<sup>3</sup>; River bed mining (Ganga Adinawa) and Open pit shallow mining (Pathal). All categories of mining activities are undertaken on a similar scale. In addition, there are two types of gems exported from Sri Lanka known as precious and semi-precious stones with the bulk of export earnings from gem coming from precious stones. The Blue Sapphire is one of the most abundantly found precious stones in Sri Lanka. Apart from the blue sapphire, those gems regarded as precious stones are pink and yellow sapphires, star sapphires, rubies and star rubies. Table 1 shows the main varieties of gems found in gem gravels of Sri Lanka.

Sri Lanka has also witnessed the emergence of "Geuda" gemstones or milky cabochon sapphire as a potentially valuable source of export income within the last decade. However, the gem merchants in Thailand in the last two and a half decades have been extremely successful in the heat treatment of Sri Lankan geudas to produce high value blue sapphires. Other precious gemstones such as Cats eyes, Rubies, Alexandrites, white Sapphires, Topaz and a large variety of semi-precious stones are available in abundance in this country.

---

2. These could be seen in Eheliyapoda, Ratnapura and Matale and generally involve smaller pits of the sizes 6x12x12 ft. and 6x22x18 ft.

3. Tunnel mining mainly occurs in the Balangoda and Ratnapura district.



**TABLE 1**  
**GEMS — SRI LANKA**

<i>Mineral*</i>	<i>Gem Variety</i>
Corundum	Sapphire, Star-Sapphire, Ruby and Star Ruby, Yellow, Orange and White Sapphire
Chrysoberyl	Alexandrite and Cat's eye
Beryl	Emerald
Topaz	White and Yellow Topaz Blue, Green, Violet and Red Topaz (pale tints)
Tourmaline	Black, pink, rose-red blue brown and other coloured tourmaline
Garnet	Pyrope-deep red to black. Almandine-deep crimson, red to violet. Grossularite-honey-yellow to brownish yellow. (Also known as hessonite or cinnamon stone).
Spinel	Spinel-deep red, green violet
Zircon	Hyacinth - red, orange, brown and yellow varieties. Jargon - other coloured varieties
Quartz	Rock-crystal, amethyst, rose quartz, smoky quartz, citrine (yellow) Cats' eye quartz
Felspar	Moonstone, and Amazon stone
Cordierite	Iolite
Andalusite	Andalusite
Apatite	Apatite
Kornerupine	Yellow and brown varieties
Sinhalite	Brown (shades of Brown)
Taaffeite	Pale violet - Eheliyagoda
Ekanite	Dark Green—Found at Eheliyagoda
Calcium Carbonate	Pearl

*Source :* Mineral Resources of Sri Lanka

\* The definitions and other detail of some of these varieties of gems are shown in the appendix Table 1



## **Gem Exports : 1960 — 1990**

In recent years, the export of gems has become the principal foreign exchange earner among the country's mineral exports. As shown in Table 2, during the period prior to the inauguration of the State Gem Corporation (SGC) the annual average value of gem exports was only Rs. 3.0 million in 1960-70 decade. The highest export value in this period was only Rs. 4 million each in 1965 and 1970 respectively. Before the setting up of the SGC, the gem business of Sri Lanka was in the hands of a few individuals.

With a view to developing the gem industry in Sri Lanka, the SGC was established under the ACT No. 13 of 1971 and commenced its operations on 1st November, 1971. The Corporation commenced its commercial operations in July 1972. With the commencement of the commercial operations the following activities were undertaken.

- The establishment of an export section
- Buying and selling of Stones
- Retail sales of gems to tourists
- Testing of gems free of charge for tourists

After the setting up of the SGC, the value of gem exports ha increased significantly from Rs. 3 million in 1971 to Rs. 12 million in 1972, an increase of three fold over that of the export value recorded in 1971. By 1973, the value of official gem exports had risen to Rs. 141 million, recording an increase of thirty times over the 1970 level and ten fold increase over the export value in 1972. This was the highest ever recorded growth rate of export earnings in the history of gem exports. Although, there was a decline in gem exports, by 23 per cent in 1974, the general trend had been one of rapid increase until 1978. This improvement was mainly due to the package of incentives granted to the industry including a very favourable effective exchange rate to gem exports in the form of Foreign Exchange Entitlement Certificate (FEECS) and the Convertible Rupee Account (CRA) system introduced along with the establishment of the State Gem Corporation.

All non-traditional exports including Gems were entitled to FEECs, which gave a premium of 25 per cent in 1971, over the official exchange rate. It was gradually increased and by 1977 it was 70 per cent. The CRA foreign exchange system introduced in 1973 intended to boost earnings from Gems and other non-traditional exports. The gem exporters were able to utilize CRA Funds, to import cars and other commodities. In addition, the SGC has also issued permits for cut and uncut gems purchased and all exports of gemstones from Sri Lanka.



TABLE 2

## The Value of Gem Exports : 1960 - 1977

<i>Year</i>	<i>Official Gem Exports (Rs. Mn.)</i>	<i>Annual Percentage Change</i>
1960	4.0	—
1961	2.4	—20
1962	3.6	+50
1963	3.6	0
1964	1.3	—64
1965	4.1	+215
1966	3.9	—5
1967	3.5	—10
1968	2.0	—43
1969	0.7	—65
1970	4.3	+514
1971	3.4	—21
1972	12.3	—262
1973	140.8	+1045
1974	108.7	—23
1975	180.2	+66
1976	261.4	+45
1977	298.0	+14
1960 - 1977 Average	57.6	115

*Source:* Central Bank of Sri Lanka

The reaction of the gem export trade to the new exchange rate policy and the liberalisation of imports in November 1977 was felt immediately and in 1978, the value of official gem exports declined by 5 per cent in SDR terms, but increased by 78 per cent in Rupee terms over the previous year (Table 3). The relative importance of gem exports as a non-traditional export stood at 4 per cent of the total exports in 1978.



TABLE 3

## GEM EXPORTS : 1977 - 1990

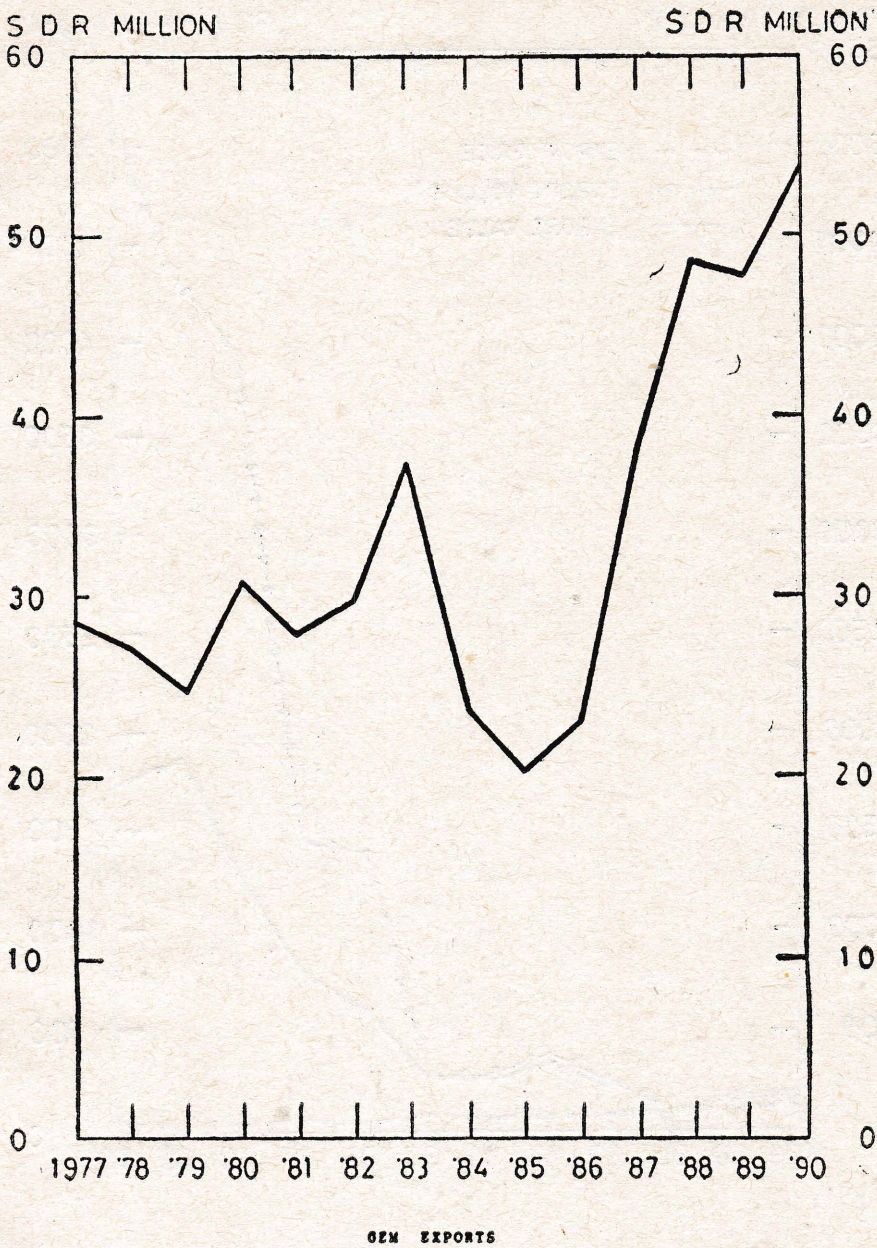
<i>Year</i>	<i>Gem Exports* (SDR MN)</i>	<i>Annual Percentage Change</i>	<i>Gem Exports as a percentage of total Exports</i>
1977	28.6	—	3.9
1978	27.1	— 5	4.0
1979	24.6	— 9	3.3
1980	30.9	+26	3.8
1981	27.9	—10	3.1
1982	29.8	+ 7	3.2
1983	37.4	+26	3.7
1984	23.6	—37	1.6
1985	20.3	—14	1.6
1986	23.0	+13	2.2
1987	38.0	+65	3.5
1988	48.4	+27	4.4
1989	47.7	— 1	3.9
1990	54.0	+13	3.7
1977 - 1990	32.7	+ 8	3.3

*Source :* Central Bank of Sri Lanka.

\* Based on customs records.



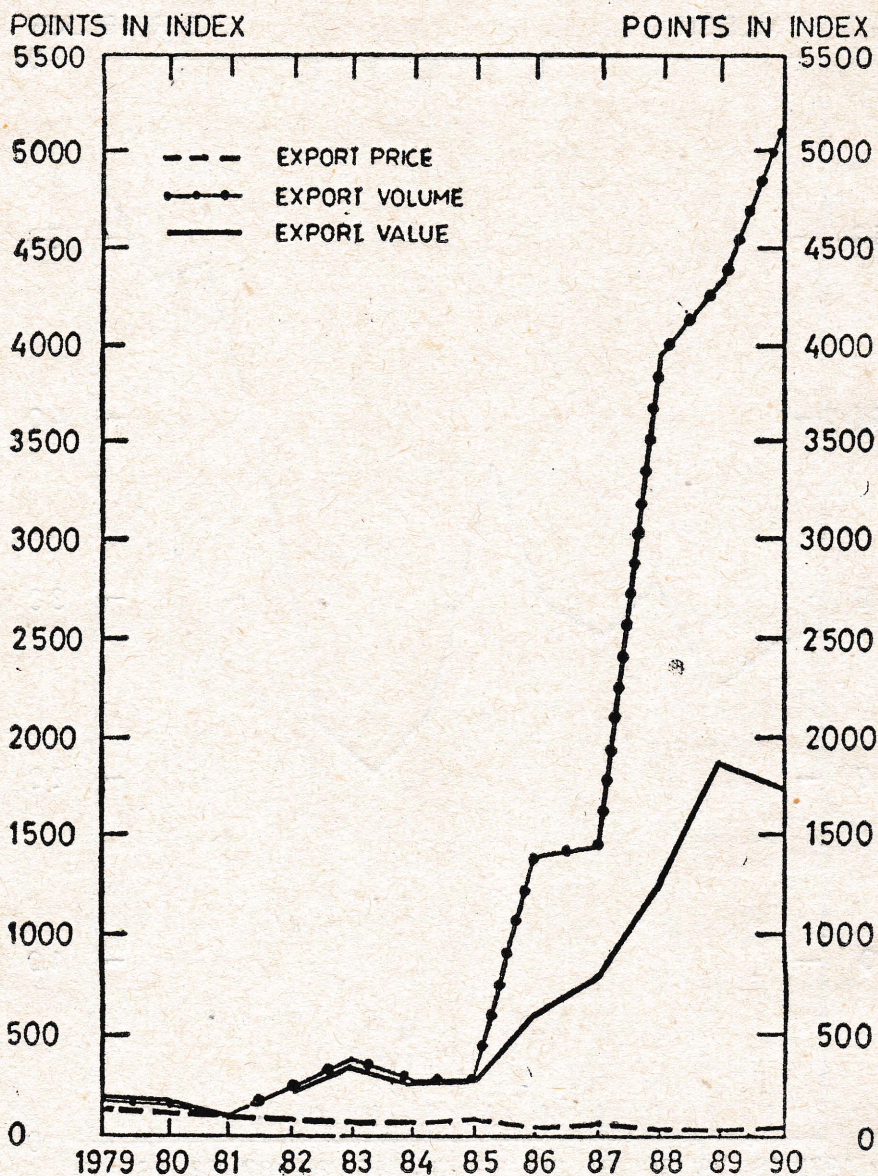
**FIG.1: GEM EXPORTS: 1977 - 1990**



In 1979, there was a further decline of 9 per cent. The Gem exports in the period 1980-1990 have not shown a continuous upward trend (see Fig. 1).



**FIG.2: CENTRAL BANK GEM INDICES**  
**(1981=100): 1979 - 1990**





According to Customs data which does not reflect the actual position due to time lags involved, earnings from gems in 1980 at SDR 31 million showed a remarkable increase of 26 per cent compared with SDR 25 million in 1979. Although lower than the earnings in 1980, gem exports during 1981 remained much higher than the earnings in 1978 and 1979.

Even if the export value of gems, increased by 26 per cent in 1983 compared with 1982, the value of gem exports declined by 37 per cent in 1984 and 14 per cent in 1985. Reflecting this decline, the relative share of gem exports of the total exports too, dropped from 4 per cent to 2 per cent. From 1986 to 1988, the value of gem exports increased by 13, 65 and 27 per cent respectively. Consequently, the share of gem exports in total exports also increased from 2 per cent to 4 per cent. The increased earnings from gem exports during 1986/88 period reflected increases in the volume of gem exports (by 185 per cent) as shown in Table 4. However, gem exports dropped by 1 per cent in 1989, entirely due to a price decline of 3 per cent (Fig. 2).

TABLE 4

Gem Indices of the Central Bank (1981=100) : 1979 - 1990

<i>Year</i>	<i>Export Price</i>	<i>%</i>	<i>Export Volume</i>	<i>%</i>	<i>Export Value</i>	
1979	111	—	147	—	162	—
1980	105	— 5	144	— 2	152	— 6
1981	100	— 5	100	—31	100	—34
1982	95	— 5	240	+140	227	+127
1983	83	—13	376	+57	312	+37
1984	84	+ 1	280	—26	234	—25
1985	99	+18	292	+ 4	290	+24
1986	43	—57	1385	+374	598	+106
1987	53	+23	1424	+ 3	755	+26
1988	31	—42	3954	+178	1226	+62
1989	30	— 3	4314	+9	1894	+ 6
1990	34	+13	5095	+18	1722	+33
1979 - 90 (Average	72	— 7	1268	+66	505	+20

Source: Central Bank of Sri Lanka.



The increased earnings from gem exports (by 13 per cent) in 1990, reflected increases in both volume (by 18 per cent) as well as the price of exports (by 13 per cent).

Table 5 shows the ownership of the Gem exports, based on data published by the State Gem Corporation. Accordingly, the private sector accounted for 90 per cent of the total value of gem exports, while only 2 per cent was accounted for by direct exports of the corporation during 1980-88 period.

**TABLE 5**  
**Ownership of Gem Exports : 1980 - 1988 (Rs. Mn.)**

<i>Year</i>	<i>Gem Corporation</i> (1)	<i>Private Sector</i> (2)	<i>Total</i> 3 (1+2)	<i>2 as a Percentage of 3</i>
1980	65.4	598.4	663.8	90
1981	8.4	624.0	632.4	99
1982	7.4	385.9	393.3	98
1983	1.4	517.7	519.2	100
1984	6.8	497.7	504.5	99
1985	0.9	430.8	431.7	100
1986	20.9	632.1	653.0	97
1987	31.5	1313.3	1344.8	98
1988	8.4	1851.8	1860.2	100
1980-88 Average	16.8	761.3	778.1	98

*Source:* Central Bank of Sri Lanka

Private traders who were engaged in the gem business appear to have reduced their transactions with the SGC as a result of the open economic policies which came into effect in 1978, and tended to carry on their business activities through other means. Apparently, the smuggling of gems out of the country appears to have increased since 1978. This is confirmed by the significant decline in the value of gems sold to the corporation as shown in Table 4. The major reason for this situation was the entry of Thai nationals into the gem trade in Sri Lanka who were making fortunes by smuggling raw "geuda" stone out of the country and turning them into precious-stones. In consequence the gem trade of Sri Lanka suffered a severe blow which in turn had adverse repercussions on the local economy. According to a special report on "impact of Thai intervention" published by the People's Bank in April, 1985, the effects of the entry of Thai nationals into Sri Lanka's gem trade and industry were in some ways adverse and in others beneficial.



Finally, official data pertaining to the value of gems exported from Sri Lanka as recorded by the Customs Department and the State Gem Corporation, are shown in Table 5. Accordingly, the exports are valued at Rs. 1.9 billion in 1990 but field research studies by the Central Bank indicate that production of precious gem stones is in the region of Rs. 10 billion. This shows that there is a considerable amount of gems being smuggled out of the country, which has resulted in a substantial loss of foreign exchange to Sri Lanka. In view of the above, and other reasons, the Government of Sri Lanka has appointed an Action Committee (AC), to implement measures to develop heat-treatment, cutting and polishing of geuda gem stones in Sri Lanka and developing the gem exports and industry as whole. In pursuance of these objectives, the AC is currently planning for the setting up of a Sri Lanka Gem and Jewellery Exchange, conforming to international standards, which will provide foreign gem stone buyers with an opportunity to examine and make their purchase of Sri Lankan Gem Stones under one roof.

**TABLE 6**  
**Direction of Gem Exports (Rs. Mn.)**

Country	1973	%	1974	%	1975	%	1976	%	1973-1975 Average %
Hongkong	79.5	53	38.1	35	46.8	26	101.9	39	38
Japan	35.9	24	15.7	14	77.7	43	93.2	36	29
Switzerland	15.4	10	22.1	20	28.0	16	22.0	8	14
West Germany	3.7	2	3.4	3	3.0	2	7.3	3	2
Singapore	3.4	3	3.5	3	4.1	2	7.2	3	3
U.K.	4.2	3	2.6	2	2.1	2	2.4	1	2
U.S.A.	2.5	2	6.1	6	4.2	1	5.9	2	3
Middle East*	—	—	1.9	2	3.5	2	7.8	3	3
Others	6.2	4	15.3	15	10.8	6	13.7	5	7
Total	140.8	100	108.7	100	180.2	100	261.4	100	100

*Source:* Customs Returns (Sri Lanka)

\* Duabi, Kuwait, Lebanon



## Direction of Gem Exports

Sri Lanka gems have been supplied to the international market from ancient times. In recent years, the markets for Sri Lanka's gems are mainly in the developed countries such as Japan, USA, Germany and some Asian countries particularly Hong Kong, Thailand, and Singapore which are famous international trade centres.

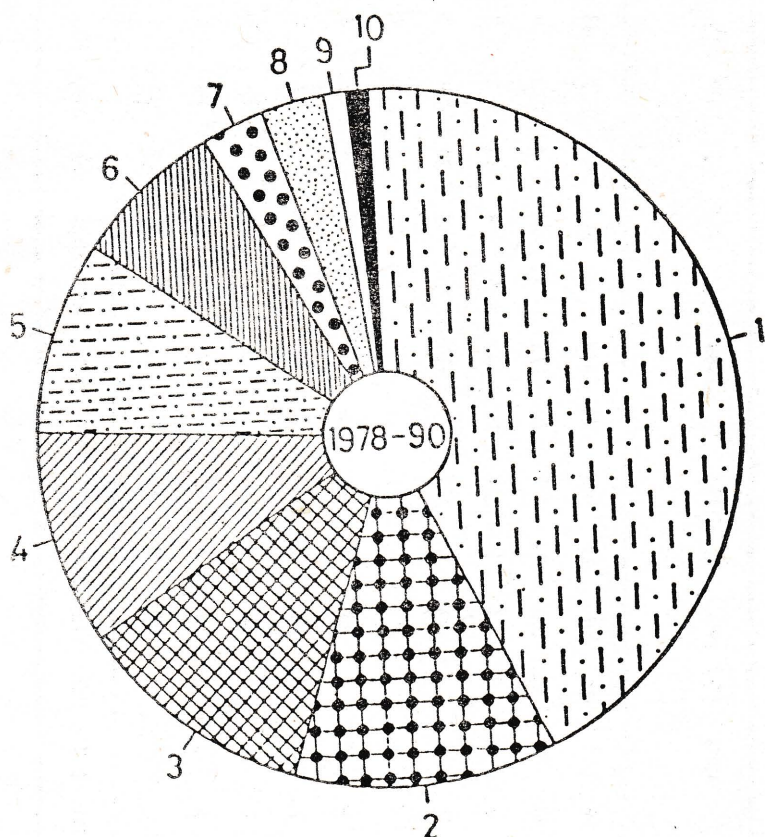
As seen in Table 6, out of Sri Lanka's gem exports to major markets before 1978, Hong Kong accounted for the largest share of Sri Lankan gems until 1974. For the first time, Hong Kong was displaced by Japan in 1975. As a result of the World-wide recession in 1973, Japan which held large dollar balances and could not convert them back to Yen. Started importing gems however, according to Customs data, Japan and Hong Kong accounted for nearly 70 per cent of the total gem export of Sri Lanka in 1975. In 1976, their imports increased further to 75 per cent of the total gem exports from Sri Lanka. During this period, Switzerland had become the biggest importer of Sri Lanka gems among the Western countries. Middle East countries such as Kuwait, Dubai, Lebanon and Saudi Arabia also imported gems from Sri Lanka in late 70s.

As in the past, Japan (43 per cent) continued to be the largest buyer of Sri Lanka gems since 1978. In addition, as seen in Table 7 and Figure 3, the other principle export markets for gems were Hong Kong (12 per cent), Thailand (11 per cent), U.S.A. (10 per cent), Switzerland (7 per cent,) West Germany and Singapore 13 per cent each) during 1978-1990 period.

It is also interesting to note that Japan, U.K. and Singapore imported the higher priced gemstones whereas Hong Kong, U.S.A., Thailand, Germany, Switzerland and Singapore purchased only the semi-precious, cheaper varieties of stones as shown in Table 5B based on Customs data in 1990.



**FIG.3: DIRECTION OF GEM EXPORTS: 1978-1990**



1.	JAPAN	43%
2.	HONG KONG	12%
3.	THAILAND	11%
4.	U. S. A.	10%
5.	OTHER	9%
6.	SWITZERLAND	7%
7.	WEST GERMANY	3%
8.	SINGAPORE	3%
9.	INDONESIA	1%
10.	U.K.	1%



TABLE 7

## Direction of Gem Exports (Rs. Mn.) : 1978 - 1990

Country	1978	%	1980	%	1982	%	1984	%	1986	%	1987	%	1988	%	1989	%	1990	%	1978-1990 average %
Japan	262	49	121	26	246	36	294	48	401	53	627	43	912	44	913	41	1251	43	43
U.S.A.	23	4	56	12	46	7	73	12	106	14	171	12	172	8	184	8	303	10	10
Hongkong	137	26	90	20	57	8	69	11	64	9	228	16	100	5	218	10	217	7	12
Thailand	—	—	—	—	10	1	18	3	28	4	265	18	620	30	593	27	658	22	11
West Germany	8	2	18	4	15	2	16	3	31	4	31	2	26	1	92	4	173	6	3
Switzerland	41	8	85	19	41	6	41	7	47	6	40	3	96	5	8	4	57	2	7
Singapore	10	2	6	1	47	7	48	8	24	3	24	2	44	2	39	2	79	3	3
Indonesia	—	—	—	—	12	2	16	3	24	3	6	—	9	—	7	—	86	3	1
U.K.	4	—	18	4	9	1	13	2	8	1	15	1	14	—	15	—	16	1	1
Other	46	9	16	14	203	0	30	5	23	3	41	3	77	4	56	3	93	3	9
Total	531	100	458	100	685	100	617	100	755	100	1447	100	2070	100	2204	100	2399	100	100



**TABLE 8****Average Price per carat in 1990**

<i>Country</i>	<i>Amount (Carates)</i>	<i>Value (Rs. Mn)</i>	<i>Avg. Price Per Carat (Rs.)</i>
Japan	270,694	1,251	4,621
USA	2,697,692	303	112
Hong Kong	1,460,802	217	149
Thailand	10,947,816	658	60
W. Germany	3,046,776	173	57
Switzerland	403,455	57	141
Singapore	353,830	79	223
Indonesia	576,836	86	149
U.K.	69,112	16	232
other	339,853	93	274
<b>Total</b>	<b>20,166,866</b>	<b>2,933</b>	<b>1,454</b>

**Summary and Conclusion**

Sri Lanka has built an impressive reputation for the beauty, variety and the fine finish of her precious gemstones. Most of the gem fields in Sri Lanka are situated in the South-West of the country. As seen in Section 2, the annual value of exports between 1960, 1977 and 1978, 1990 have varied between Rs. 3.0 million to Rs. 298 million and SDR 29 million to SDR 54 million respectively. The major importing countries have varied during the period under review as discussed in Section 3, but the major importers who imported more than 75 per cent of Sri Lankan gems during the last 13 years have been Japan, Hong Kong, Thailand and the U.S.A.

Major findings of this study can be summarized as follows:

1. Earnings from gem exports in SDR terms rose remarkably during the last five years compared with the previous years. This was entirely due to a volume increase, from 2.4 million carat to 20.2 million carat during this period.
2. Japan was the largest market for Sri Lanka gems since 1975. In addition, about 75 per cent of the total exports has been accounted for by four countries namely, Japan, Hong Kong, Thailand and U.S.A. during the period under review.
3. Among the countries purchasing Sri Lanka gems, Japan buys the higher priced gemstones, whereas the other countries purchase semi-precious varieties which are cheaper.



## APPENDIX 1

### 1. **Corrundum**

The most important gem stone in Sri Lanka, the blue sapphire of this variety accounts for normally 60 per cent of its exports. Corrundum crystalises in the hexagonal system and its main chemical component is aluminium oxide. However, various impurities singly or in combination give it different colours. Shades of yellow, blue and green in corrundum are often caused by the presence of iron while chromium gives it a red colour. Manganese makes it purple in colour while Titanium make it blue in colour. Colours could range from pale and light to deep and the distribution is invariably patchy and rarely uniform.

### 2. **Blue-Corrundum**

Commonly known as the sapphire occurs in different degrees of transparency. Flawless transparent stones are rare. Colours could range from pale and light blue to greenish and deep blue with irregular colour patches.

### 3. **Ruby**

Another stone of the corrundum variety received its red colour from chromium oxide. Most of the rubies found to be found in Sri Lanka.

### 4. **Yellow-Corrundum**

Available from pale yellow to deep golden yellow. Large stones have been found in certain areas. Yellow sapphires are fairly common.

### 5. **Padmaraga**

Another colour variation of the corrundum, the more valuable stones have a deep orange colour with a red dish hue. There are colour combinations of yellow red and a tinge of pink. Apart from the above colours, parti-coloured stones are common.

Asteriated or Star Corrundums display six rayed stars when cut enin cabochon. It does not have facets but is round or oval in shape or with double convex faces. The maximum effect of the star is produced when the stone is cut with the centre of the curved surface lying in the axis of the crystal and is best seen when observed under a direct single source of light. The star phenomenon is purely a reflection effect caused by microscopic needle like mineral inclusions or minute cylindrical cavities, either of which are arranged in a regular pattern. The rays of the stars may be



narrow and sharply defined in strong colour against the background colour of the stone. Star stones are available both in the ruby and the blue sapphire varieties. A milky white grey and smoky colours are quite common.

**6. Cats Eyes**

This is a fibrous variety of chrysobery containing needle like minerals in the structure or cavities created in a particular fashion. When these stones are cut en cabochon a silvery streak of light is displayed resembling the pupil of a cat's eye. The silvery line or streak of light shows up against the background of a body colour of the stone. Stones are available in milk white, bluish or greenish white or yellowish brown colours.

**7. Alexandrite**

This gem stone was named after Ozar Alexander II of Russia on whose birthday it was found in the Ural cmountains. Its colour varies from dark grass green, emeralda green to bluish cgreen and contains a small percentage of chronic oxide. Some stones show the natural colours in dry light which changes to raspberry red or violet under articial light.

**8. Spinel**

These occur usually along with corrundum and are found in abundance.

The colours here are pale to dark blue, and shades of mauve and purple. Blue spinels are also fairly common in Sri Lanka.

**9. Topaz**

Occurs mainly as clear transparent water worn pebbles. Pale yellow, dark yellow and colourless stones occur more abundantly while saffron and light green shades are rare.

**10. Beryl**

Composed of silicate of aluminium and berylium. Absoluently pure beryl should be colourless but different colouring elements such as chromium and iron give it varying shades. Emerald the most important of the beryl variety has not been found in Sri Lanka, though aquamarine a beryl variety is available in colours of greenish blue and pale green.

**11. Garnets**

These are very common in Sri Lanka and quite a number of elements go into the composition of the stone replacing each other without affecting the crystal formation under the cubic system. There is generally a uniform distribution of colour in the garnet. The transparency varies from clear to the turbid.



#### 12. **Tourmaline**

It is silicate but has a complex and variable chemical composition. This has resulted in its physical properties differing according to its chemical composition. Various colours are available, while the most common in Sri Lanka is the green tourmaline; blue, orange, brown stones too are quite common.

#### 13. **Zircon**

Is combination of silica zirconium with a minute element of uranium. Zircons are found in numerous shades such as brownish yellow, golden yellow, reddish yellow, green, deep orange, brown, sky blue and violet.

#### 14. **Moonstones**

Belong to the feldspar family and two varieties occur in Sri Lanka, e.g. e.g. stones that reflect only a milky light. These stones are translucent and are cut en cabochon.

Many other stones are available such as andalusite, sinhalite, diopside, their colours varying from pale yellow, green and brown to shades of violet and blue.

*Source :* The Gem Industry in Sri Lanka.

#### **References**

Customs, Sri Lanka; Customs Returns, 1978 - 1990

Cooray, P. G. (1967); The Geology of Ceylon National Museums of Ceylon Publication pp. 195-6

Central Bank of Sri Lanka; Annual Report - 1963 - 1990 and the Review of the Economy 1975 - 1988

Fernando, L. J. D. (1950); The Geology and Mineral Deposits of Ceylon, Vol. XLVI, Nos. 2-4, 303-325 pp. 318-320.

Central Bank of Sri Lanka; News Survey Vol. 3 No. 12 - Dec. 1983.

Gem Corporation; Annual Reports

Karunatilake, H. N. S. (1987), 'The Economy of Sri Lanka' Centre for Demographic and Socio-Economic Studies, Colombo.

Herath, J. W. (1975); Mineral Resources of Sri Lanka; Geological Survey Department—Colombo - pp 19 - 67

People's Bank; Economic Review—Sep. 1977 and April, 1985.

Punchiappuhamy; T. G., The Gem Industry in Sri Lanka.



## PANEL DISCUSSION

NOWFEL JABIR

I have been in the gem trade for a very long period and therefore can say that from my experience in the gem trade this is the second time after two decades that the gem industry is being revived and is taking good shape. After the late Dr. N. M. Perera initiated this industry, a new set of authorities have once again come forward to revive this industry as they have realized its vast potential. Having listened to the speakers we all know that the government is serious about developing this industry. We, from the private sector who are in the trade should respond to the call of the government authority. We ask of the learned speakers to act with collective responsibility to bring into effect what has been spoken today. In general, the thinking of the speakers is that the gem trade needs assistance and cooperation of the authorities concerned. From 1972 to 1976, when we were called upon to take the necessary initiative in earning foreign exchange, we did it. Thereafter we have been looked down upon, probably because the country was drawing much money from the World Bank and our assistance was not felt. Now, the attitude of the Authorities have changed and I hope that you will realise our potential and come to us as we are prepared to come to you.

### Panel Discussion

**Question:—** I can remember when I was in the Finance Ministry and when we were setting up the Gem Corporation, Arthur C. Clarke came to us with a proposal that in the cascading rivers, there is a possibility that gems, which had been washed down from the upper stream would get deposited at the bottom of the waterfall. If divers could be employed this could be explored with the possibility of the National Geographical Magazine sponsoring it. This idea did not go beyond that. However, I just mentioned it to find out whether there is a scientific and technical possibility for such deposits to take place and whether this is an exploitable opportunity.



**Reply :-**

The principle is, that the minerals which we call heavy minerals because of their specific criteria are transported by rivers, whenever the speed of the flow retards and slows down, these minerals are deposited. These are the places to look for gems. These locations may not be the only ones. There could be many other places such as where a river flows through a marsh. There again, that marsh acts as a barrier for that flow, these are the locations one could look for gems.

**Question :—** When one finds gem deposits in the cascading area of a river, how would exploring for gems in that location impede the environment?

**Reply :-**

Any form of excavation disrupts the present state of the natural soils, that is the gemophology is disrupted. Due to these disturbances, soil layers are turned upside down and that is the reason why gem mining has been attributed to a number of environmental issues such as erosion, landslides, etc. What should be done is to bring the environment back at least to some form of its original shape. In the case of mechanised gem mining by Australians they try to make that area of land arable after that. The danger is when after gem mining the place is heaped with soil and left without any vegetation.

**Reply 2 :-**

In gem minerals, the only identifiable physical distinguishable property is the specific gravity among many. In fact we are lucky that it does not give out any other conspicuous properties because if it does we will not be having any gems. Since this is only the specific gravity, they normally tend to lie in structural traps or gemophological traps such as in a waterfall, when it comes down from the point of high energy to a point where energy is lost. Therefore, in low energy areas gems can be trapped. This would not be only at the bottom of waterfalls but at the inside of river bends and where if you consider in a general manner at slope brakes. Slope brakes is quite evident when you take Sri Lanka as a whole. As Professor Dissanayake said we have the highland rock types that constitute the highland which is the high relief of the country. Ratnapura, Okkampitiya and all such areas represent slope breaks. This is where most of our gems are found. Elahera is virtually at the foot hills. This is a very prime factor, which we could make use of in various explorations.

We have been involved in doing a few geophysical surveys, to identify buried river channels. There are geophysical techniques to identify these areas, which can be targetted for future exploration.



## PANEL DISCUSSION

K. SHANMUGALINGAM

I may recall Dr. Sirisena mentioning about the official growth rate of the export of gems during the few years after the setting up of the Gem Corporation. The reason behind it was the broad economic policies adopted by the previous Government. At that time there was the multiple exchange rates and the Convertible Rupee Accounts (CRA) which gave the gem exporters a high rate of exchange and they were also able to purchase some goods which could not be freely imported. This gave a premium and as a result official exports had a phenomenal growth.

There are two schools of thought on the exchange rate system. One broadly says you keep the exchange rate in fairly realistic levels and all sectors will respond in an equal magnitude of direction. There is another school of thought which says you have a different rate of exchange and give the incentives to those sectors which will respond much faster. In economic jargon, the sector where the elasticity is great. You concentrate on your incentives to those sectors where expansion and earnings are greater.

One can see that the multiple exchange rate system worked to push up the nontraditional exports during the 1970-77 period. This we abandoned when we adopted a broad liberalised economic policy where all sectors were treated equally. This is perhaps one of the reasons why (my personal view), that the official exports went down. However, as a counter measure to this there were different schemes to give gem exporters a higher rate of return on exchange through tax holidays; export incentives through the Export Development Board and various other forms of subsidies which all together perhaps did not make the effective exchange rate adequate to get gem exports into official channels.

Gems are also easy to smuggle because these are so easy for anybody to carry. So long as one does not get the right exchange rate Sri Lankans are forced to keep the exchange earned abroad. They are not very sure of the government's overall policies and in what direction the exchange rate would behave. Most of the time the people are guessing whether the exchange rate



would be stable; whether the government would introduce controls because of the position of foreign exchange reserves. There is always a lack of confidence in the broad macro economic policies and in the external accounts balances. Therefore, one cannot undermine the need for a certain category of people to keep the exchange abroad. The question to be addressed is how to get back the exchange that is abroad to finance the government imports. If exports do not go out officially and if the receipts do not come in officially, to this extent the Central Bank and the government are worried. Foreign assets and reserves are being siphoned out and therefore measures should be taken to conserve or manage.

Right now we have serious problems. As you all know the price of oil has gone up. Middle East remittances are in doubt and tea prices are in doubt. All these situations create instability in the minds of various business people. In such a situation the incentive is to smuggle out more gems and have the foreign exchange abroad. It is a very difficult task to frame policies to bring the entire exports into the official channels. There are all types of mechanisms to keep funds abroad; under invoicing, over invoicing and also to some extent the higher tariffs we maintain on some category of goods which can be imported by under valuation. To support this kind of under valuation one needs foreign exchange abroad and perhaps gems is an easy way of finding exchange to finance under valued imports, pay low rates of duty and then market it. I may quote textiles for instance. It is normally allowed to be imported at very high rates of duty (200 per cent) through official channels. To finance this, smuggled gems is one of the means of exchange. As long as you have the following kinds of distortions in the system: (a) the exchange rate, (b) extraordinary high tariffs and (c) controls on current and capital transactions, foreign exchange will be kept abroad.

One cannot prevent people keeping funds abroad as ways and means of keeping funds abroad will continue to be there. What the government can possibly do is to take meaningful measures to arrest this. It cannot be totally eliminated. I believe the government has recognised this and is proceeding it set up another institution called the Gem Authority. This is to assist the gem industry. However, changing institutions and creating new institutions will not solve the basic problems. As mentioned earlier, the lack of financing facilities, inability of the banking system to value the gems and advance funds to the gem traders etc. are some of the problems. In a country like Belgium, and cities like Amsterdam, Bombay there are the expertise to value gems. They have the banking expertise to do it. In Sri Lanka one must develop the expertise to value gems. Even the Customs, I believe, do not have adequate expertise to value gems. It is sometimes done arbitrarily. Unless this expertise is developed, financing of the gem industry will be difficult and in the short term more difficult. I think with the assistance of those who are already in-



volved in the gem industry it may be possible to develop the basic infrastructure to assist in the financing of the industry, which is one aspect we are trying to resolve.

The other aspect is to assist those who are employed in the gem industry so that they get full value for the gems they mine. This is one of the reasons for which the Gem Corporation was set up. The fact cannot be ignored of the exploitation of the ordinary gem miner by those who are in the gem trade. This was one of the reasons for the Corporation to be set up and to some extent this problem was solved. Unfortunately, the Corporation itself got into bureaucratic bungling. As time goes on the bureaucracy becomes corrupt and the very purpose for which the institution was set up for is lost and totally undermined.

The third aspect I would like to mention is that there is no point in trying to frame regulations and try to over regulate and control the industry. From the environment point of view one has to take measures to protect the environment. Therefore, mining should be controlled and the regulating authority must look after these aspects. However, if the government or any other authority tries to regulate the jewellery industry by requiring those in the industry to be licensed and bringing in many laws to regulate the industry from the point of finding the gem till the point of exporting such regulations will only be detrimental to the industry.

As long as the macro economic policies of a government are incorrect smuggling will continue. Smuggling could be prevented by way of incentives. In the present context it is not possible to give the kind of incentives that were given in the 1970s such as a premium of 500 or 250 per cent on a unit of currency earned by the export of gems. We would be satisfied with a reasonable premium may be in the form of tax exemptions, special grants from the EDB to push up the effective exchange rate for the gem industry and such similar incentives. As I mentioned earlier this industry is like oil for us. Therefore let us spend some more money which would be worthwhile by giving those in the jewellery industry an effective exchange rate higher than that which the other sectors could possibly receive. This cannot be operated through the exchange rate but through subsidies and other incentive payments to the industry.

I believe in this way the unofficial exports could be routed through official channels that would enable the industry to develop in the white. In India for instance, black money is estimated to be about 35 to 40 per cent and gems have become a convenient method of holding black money. Both black money and smuggling of gems cannot be totally eliminated. Therefore, we have to adopt policy measures to mitigate, or to reduce this kind of operation. If we try to overregulate, I believe it will be counter-productive.



It is important to mention the tremendous development of the gem and jewellery industry, particularly, diamond cutting and polishing. About five million workers are employed in this industry and quite a substantial amount of value addition is taking place. Their skills have developed over the years. I must also mention that Sri Lanka, in the last four or five years has developed the diamond cutting and polishing industry quite successfully. At least one or two firms are operating profitably. Initially they were on the verge of collapsing but thanks to the assistance given by the EDB that was instrumental in preventing such a collapse.

I personally know that one or two firms are doing extremely well in cutting and polishing garnets. Their exports exceed Rupees 4 billion. This is an area which Sri Lankans can do extremely well, as our workmen are equally skilled and capable as their Indian counterparts. Cutting and polishing of diamonds largely go through official channels and a number of incentives, such as the removal of duties on all machinery and equipment for cutting and polishing of diamonds would be an advantage. Training in lapidary work particularly for those in the Janasaviya group has been announced, with the assurance of special incentives by the government.

Many measures where possible are being taken to assist the industry. However, meaningful measures are needed in the development of the industry in the medium term. Finally I recall the fact that we recognised the complexities of the gemming and gem industry. Therefore, it would be an easy task to find incentives or regulations to match the type of industry that it is.



SRI LANKA ECONOMIC ASSOCIATION

SEMINAR ON GEM INDUSTRY

— 18TH AUGUST, 1990 —

PROGRAMME

**Opening Session :**

*Chairman:* **Prof. B. Hewavitharana**, Professor of Economics, University of Peradeniya and Vice President, Sri Lanka Economic Association.

Welcome Address by **Prof. B. Hewavitharana**, Vice President, Sri Lanka Economic Association.

Inaugural Address by the Prime Minister, **Hon. D. B. Wijetunga**

*Keynote Address by* **Dr. H. N. S. Karunatilake**, Governor, Central Bank of Sri Lanka.

Vote of thanks by the Chairman of the Session and Adjournment for Refreshment.

**First Technical Session :**

*Chairman:* **Prof. B. Hewavitharana**, Vice President, Sri Lanka Economic Association.

**Prof. C. B. Dissanayake**

*Gem Resources in Sri Lanka in Relation to Gem Resources in other Countries in the World.*

**Mr. Tom Ellawala**

*Enhancing the Present Gem Export Potential by Increased Value Added.*

**Second Technical Session:**

*Chairman:* **Mr. K. Gunaratnam**, Chairman Export Development Board

**Dr. N. L. Sirisena**

*Mobilisation of Resources through the Development of Gem Industry.*

**Dr. A. M. M. Shahabdeen**

*Improving the Present Gems and Jewellery Industry—Policies and Measures.*

**Panel Discussion Session:**

*Panelists :* **Mr. Nowfel Jabir**

**Mr. K. Sanmugalingam**



## Contributors

- D B WIJETUNGE — Prime Minister and Minister of Finance,  
Government of Sri Lanka.
- H N S KARUNATILAKE — B.A. (Ceylon), M.Sc. (Econ.) (London),  
MPA, (Harvard), M.A. (Econ.) (Harvard),  
Ph.D. (London) Research Fellow in Econo-  
mics, Harvard University and Governor,  
Central Bank of Sri Lanka.
- C B DISSANAYAKE — B.A. (Hons.) (Ceylon), Ph.D. Professor,  
Dept. of Geography, University of  
Sri Lanka, Peradeniya.
- A E T ELLAWALA — A former Chairman, Gem Traders'  
Association.
- N L SIRISENA — B.A. (Ceylon), M.A. (Manchester), D. Phil.  
(Sussex), Director, Dept. of Supervision of  
Non-Bank Financial Institutions,  
Central Bank of Sri Lanka.
- A M M SAHABDEEN — A former Civil Servant, Government of  
Sri Lanka.
- V MERVYN FERNANDO — B.A. (Hons.), M.A. (Econ.), Manchester  
Senior Economist, Economic Research Dept.  
Central Bank of Sri Lanka.