Special address by Dr E.G. Silas at the inaugural session of the 22nd Governing Council Meeting 9-12 May, Kochi, India

Welcome to the beautiful city of Cochin in "God's own country". We feel privileged to have this important meeting in Cochin which is the hub of fisheries activities in this country. I feel honoured for being invited by Dr S. Ayyappan, Secretary, DARE and Director General, ICAR and Dr Sena De Silva, DG, NACA as the chief guest to deliver a special address at this inaugural session.

The vision and mission oriented approach of the late Dr T.V.R. Pillay has today seen the growth of regional aquaculture networks, with global coverage in Asia-Pacific (NACA), Africa (ARAC), Latin America (CERLA), Mediterranean (MEDRAP), Central and Eastern Europe (NACEE) and the Americas (NACEA). His goal was to achieve food, nutritional and livelihood security for the fishers and rural poor. No doubt, this global networking aided by the UNDP and FAO has strengthened and expanded aquaculture development globally. There has been an emphasis on inter-regional cooperation which is evident from the joint projects with institutions and countries, undertaken as direct partnership or jointly with international organisations for imparting training and developing sustainable aquaculture. NACA's response to the restoration and developmental needs of the coastal communities so badly affected by the devastating 2004 tsunami is an example of its commitment to societal concerns.

I have admired Dr Pillay's ability to mobilise financial support from donors for the successful working of the global networking programmes in aquaculture that he initiated. So also, my friend Dr Chen Foo Yan emulating the same. The requirement and conditions vary from country to country and regionally also. The focus of Dr Pillay was on the use of locally available fish species and development of appropriate technologies for food production and supply; and prevention and treatment of diseases of locally important species under culture. The integration of aquaculture with area development plans especially in the inland and coastal areas with allied sectors such as agriculture and forestry was one of the underlying principles of his approach to aquaculture development.

Enlarging the area of operations, NACA today functions from 18 states in the Asia-Pacific with considerable diversity in life style, socio-economics and food habits. Coordination of activities under such diversity is a major task. So also, the effective monitoring of a widespread network. The reports of the regional and lead centres to be presented here should bring out how effective this coordination has been and how best this can be streamlined.

Aquaculture is increasing in importance throughout most of Asia and is likely to continue expanding. The global population is predicted to increase by about 50% to almost 9 billion people with the largest share in this region before it stabilises towards the end of the century. A 70% increase in food production will be required to support and increasingly affluent population; and as income rises people diversify and improve their diet habits demanding healthier, tasty and value-added food. Asia produced 92% of global aquaculture and Asian aquaculture is characterised by small scale, family operated farms that are typically less than 1 ha in area and the sector is a major source of income and employment for rural communities. With Asia's rapidly expanding and increasingly affluent populations, the greatest demand for fish will be for domestic rather than the export market.

Traditional aquaculture still has relevance for the poor seeking to diversify their small farms. Its principles when compared to intensive aquaculture practices have relevance for lowering the cost of production and also improving environmental sustainability. NACA has played a vital role in improving the traditional aquaculture practices and development of better management practices (BMPs) for culture based fisheries development in Asia, for culture of the striped catfish (*Pangasianodon hypophthalmus*) in the Mekong River Delta in Vietnam, implemented through groups of small-scale farmers to improve their efficiency and profitability. This has resulted in a massive expansion of striped catfish production over the past decade in Vietnam with an annual production now exceeding 1 million metric tonnes. NACA was also instrumental in developing culture-based fisheries in eleven seasonal reservoirs in Sri Lanka, stocking common carp, tilapia and *Labeo dussumieri* with the financial support of the Australian Centre for International Agricultural Research (ACIAR). This has provided a means of increasing food supply in rural areas of Sri Lanka. I hope NACA will extend such activities in other member countries.

Hill stream / cold water fishes form an important component in the aquaculture practices in the Himalayan region of countries such as Nepal, China, India, Myanmar and Pakistan. NACA may consider assisting cold water aquaculture practices as it has no ongoing activities in this field.

Climate change is affecting farming systems worldwide. It is expected that the impacts will be disproportionately felt by small scale farmers who are already amongst the most poor and vulnerable members of the society. NACA's efforts to map farmers' perceptions and attitude towards climate change impacts and adaptive capacities to address these impacts in four Asian countries including the shrimp culture practices in India (CIBA-NACSA/MPEDA-NACA project) through the 'Aquaclimate' project is highly admirable. I hope the project will provide farmers with strategies to maintain their resilience in the face of climate change.

The Aquatic Animal Health Programme of NACA is helping member states to reduce the risk of aquatic animal diseases. One of the ACIAR projects aims to improve the capability of shrimp virus PCR laboratories in Vietnam with well developed plans for PCR lab registration and accreditation. I recall such a practice successfully developed and applied in India in a NACA-ACIAR-CIBA-MPEDA project in 2005-2006 and I expect that NACA will extend further assistance to combat the challenges of newly emerging diseases not only in shrimp but also in freshwater prawns, finfish and molluscs in all member

states. The Shrimp Health Management Extension Manual prepared during the joint technical assistance programme of NACA and MPEDA at the time of the white spot syndrome outbreak in 2002 and translated into Indian regional languages, namely Tamil, Telugu and Oriya was well-received by the shrimp farmers of the region. The detailed proforma of crop and shrimp pond management and daily record sheets developed by NACA and MPEDA have been adopted by over 700 shrimp farmer societies and are currently in practice in the Indian states of Andhra Pradesh, Tamil Nadu, Karnataka and Orissa.

Incorporating the latest technologies such as molecular genetic tools in aquaculture and fisheries management will help to reduce negative impacts on biodiversity. NACA's programme on artificial propagation of indigenous mahseer species in Malaysia through scientifically based enhancement programmes and the development of conservation strategies for Mekong giant catfish has been successful. However, such an important programme has not identified any component or activity in a biodiversity rich country such as India. I urge the DG and office bearers of NACA to initiate propagation assisted rehabilitation of regionally important and endangered freshwater food species of the Western Ghats and North Eastern region of India jointly with the National Bureau of Fish Genetic Resources (NBFGR, Lucknow) and the regional lead centre, CIFA, at Bhubaneswar.

Semen banks form the backbone in animal husbandry programmes that revolutionised the entire sector. NACA may initiate establishment of cost effective milt banks for aquaculture species that would reduce the cost of broodstock maintenance, help in multiple breeding, avoid sacrificing males as in catfishes and in producing superior strains. China has made considerable progress in selective breeding of its native shrimp, *Fenneropenaeus chinensis* which may even compete with *Litopenaeus vannamei* in the coming years. Similar efforts may be initiated in Indian white shrimp, *Fenneropenaeus indicus* for faster growth rate in South Asian countries under the leadership of NACA in a collaborative mode with organisations such as the Central Institute of Brackishwater Aquaculture (CIBA), Chennai.

Dr E.G. Silas, former Director of the Central Marine Fisheries Research Institute and founding Director of the Central Institute of Brackish Water Aquaculture, Indian Council for Agricultural Research (ICAR) and former Vice-Chancellor, Kerala Agricultural University.

Grouper culture has led to a significant contribution to fish production and rural economy in coastal communities in Asia and also played an important role in conservation of the fragile coral reef fishes which are increasingly being threatened with overfishing and habitat destruction. One of the major constraints to furthering grouper culture is seed supply. The hands-on training course on grouper hatchery production offered by NACA and the practical guides on feeds and feed management and hatchery management have been immensely helpful in producing commercial quantities of grouper seed and enhancing skills in grouper culture in the Southeast Asian coral triangle. The Rajiv Ghandi Center for Aquaculture, in its programme on cage culture of groupers in the Andamans, benefited greatly from the advice of Dr Mike Rimmer, who was one of the founders of the Asia-Pacific Marine Finfish Aquaculture Network. Other candidate species such as pomfret, cobia, yellow-fin tuna and snappers can be included to widen the scope of seed production, stock enhancement and mariculture in the region. Another area of interest is coastal zoning and management with a view to identify appropriate hassle free sites for mariculture and coastal aquaculture with the help of GIS and land based surveys. The possibilities of developing aquaculture practices for non-conventional species such as ornamental fishes and sea cucumbers can be attempted by NACA to increase the revenue of the fishers as well as to curb over exploitation of resources from the wild. Experimental small volume, high density farming of locally important food fish such as the pearl spot (*Etroplus suratensis*) in floating net cages (1.0-2.0 m^3) in South India was found to be highly rewarding; such species may be prioritised in other member states to develop appropriate region-specific aquaculture technologies for rural areas.

Today there is need for certification in aquaculture, based on the chain of custody and value-chain systems. The modalities of the formulation of guidelines and execution of the same

would be major tasks. I am sure NACA could function as a catalyst to promote this activity aimed at good aquaculture practices and best management practices for assuring quality products.

Through well-organised networks, extension activities and publications, the role played by inter-governmental organisations such as the Bay of Bengal Programme has great visibility in India and other member nations and they also disseminate information in several regional languages. Likewise, NACA with more linkages, extension and developmental activities in the region could play a pivotal role. Sharing the fruits of research with countries in the network should strengthen linkages. NACA may organise more training programmes, enhance technology dissemination and promote visits of professionals among the countries for the overall development of aquaculture in the region. At the same time, it may also strengthen its interaction with other similar international networks (ARAC, CERLA, MEDRAP, NACEE and NACEA) for better utilisation of appropriate technologies and expertise.

Talking of networks, it reminds me of the webbing in fishing nets and fortunately we have in our midst our greatest expert in nets, Dr Meenakumari. Through the ages, fishing nets have evolved from weakness to strength and durability through the use of successive improved netting material, culminating now in the use of ultra high molecular weight polyethelene, popularly known as Dyneema. Its characteristics such as low weight, resistance to weathering and high durability strengthen its webbing to last longer and function efficaciously. NACA may similarly strengthen its networking in member states as well as with other international organisations to increase its visibility, improve the livelihood of rural communities to contribute towards fish food security and aquaculture sustainability.

Today you also have assembled here for the governing Council Meeting, which will elect a new Director General to head this august body. The world is slowly recovering from a devastating economic recession. In this scenario, the new Director General will have a formidable task in generating resources for the various activities of the organisation. I am sure, wisdom will prevail in the selection of the new DG. Once again, I think Dr Sena De Silva, DG NACA, and Dr S. Ayyappan, Secretary, DARE, GOI, for giving me the opportunity to participate in this inaugural function. I wish NACA a very bright future.

Thank you.