Mouvement Militant Mauricien

After the Crisis ...

A New Strategy For Mauritius

"Doing different things differently"

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Introduction

For nearly a year now, the world has been plunged in an economic crisis triggered by the financial crisis in the US.

Globalization helping, the effects have been felt all over the world. Developed countries as well as developing ones have had to grapple with the effects of the crisis, with cash-strapped enterprises and job losses causing social unrest.

Mauritius, with its strategy of export led growth and tourism development, has had to face serious problems which are still threatening the economic viability of its economy.

In the wake of this crisis, economic analysts are almost unanimous in admitting that the integration of the world economy is in retreat on every front. The same economic integration had been expected to lead to a reduction of inequalities by spreading jobs and opportunities. It is ironical that whereas the main impetus for that integration would have been the liberalization of international trade, economic downturn has been sharpest in countries which opened up the most to world trade, especially the Asian Tigers. The crisis has also led to a sharp reduction in the flow of foreign direct investment, a key factor in the transfer of technology and job creation in developing countries. The International Labour Organization (ILO) expects the number of job losses worldwide to reach 30m between 2007 and 2009.

It is evident that the extension of the US crisis world wide is due to a large extent to the process of globalization. Will the crisis be over worldwide once the US recovers?

If it can safely be predicted that financial stability in the US and other developed countries will eventually be restored, yet given the severity of the crisis, its effects will remain for a long time. Growth in developed countries may be delayed or stay low for years to come, with high unemployment a long term problem.

The more stringent financial regulations which will be put in place together with expected averseness of investors to risk-taking may lead to a reduction in the flow of investment to developing countries, especially those like Mauritius, without a sizable internal market and lack of natural resources. Furthermore, low growth and persisting unemployment will affect purchasing power in many developed countries, with implications for both prices and quantity of world trade.

In August of this year, the IMF released a report stating that the potential economic output may be lower than it was before the crisis struck and that US consumers are unlikely to return to free spending ways. According to the IMF, the crisis has left deep scars which will affect both supply and demand for many years to come. Another danger looming ahead is the conclusion of the Doha Round of trade liberalization which will lead to an end to trade preferences. With the liberalization of world trade, our exports of goods and services to our traditional markets in Europe and USA will be under intense pressures from countries like China, Vietnam and other Asian least developing countries whose exports will be more competitive than ours. Furthermore, the elimination of agricultural subsidies will inevitably lead to higher food prices whilst a recovery of the world economy will lead to

higher oil prices. Thus, additionally Mauritius may face a food crisis and an energy crisis. **Unless we take steps to adapt to the new economic order which will inevitably follow the end of the crisis, the long term impact on our economy can be devastating.**

While one should focus on finding solutions to our economic problems, we cannot, as a small island, ignore the impact of climate change on our fragile ecosystems. Indeed, climate change cuts across nearly every sector of activity, creating situations that go beyond common environmental or economic challenges, with considerable impact on economic and development practices.

Our challenge in the years to come is how to develop a socio-economic strategy that takes into account the volatility of the global economic climate and the environmental impact of climate change in a context of the liberalization of the world trading system. The aim of this new strategy is the creation of an innovative, viable and just society.

Sustainable Development

Sustainable development is a term which is common in economic literature today. What is it? The best known definition of the term was given by the Bruntland Commission as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The UN World Summit refers to sustainable development as "interdependent and mutually sustainable pillars of economic development, social development and environmental protection. It involves environmental and social concerns into all development processes."

Climate change and environmental sustainability

The development of Mauritius has taken place at considerable cost to its natural resources. Our agricultural development, land resource-managerial and economic strategies have had ecological impacts on our natural ecosystems and biodiversity with pollution of our coastal and freshwater resources. Whilst it may be that many of these adverse effects are the inevitable impacts of the development process, the global challenges to the environment demand that we have a hard look at our strategies. **Mauritius, as a small island, vulnerable to the vagaries of climate change which bring in its wake droughts, floods and intense cyclones and sea-level rise has to be resilient and adapt to these threats.** The economic and trade specialization of small islands in sectors like agriculture, fisheries and tourism, all vulnerable to climate change, render us even more vulnerable to such natural disasters. Yet, our interests and economic concerns in climate change remain largely unaddressed. On the other hand, some of the responses to climate change can affect adversely the interests of small island states. For example, levy on fuels or emission trading schemes on shipping and aviation which are under discussion at the International Maritime Organization will result in higher transportation costs with a potential negative impact on the trade of a country like Mauritius which is remotely located from its main

trading partners. Furthermore, the use of eco-labels and rise in standards for exported products may be a non-trade barrier to our exports. However, there may be opportunities for the future if a policy of climate change mitigation and adaptation is adopted. Here, technology plays an important role. Technology has been a key cause of environmental degradation, but modern technology, is an essential tool to reduce environmental impacts of development projects.

Transfer of Technology and Intellectual Property Rights

However, the Intellectual Property Rights (IPR) system does not provide incentives to invest in technologies that protect the environment. In that perspective, current discussions for liberalization of environmental goods and services should therefore include technologies and know-how that are relevant to small developing countries like Mauritius, e.g. ocean thermal energy conversion and fuel cells. This liberation of environment goods and services is crucial for the transfer of green technologies which contribute to climate change mitigation.

However, the Intellectual Property Rights systems, which protect technology diffusion through patents, make no difference between environmentally friendly and other technologies. Although international efforts are under way to accelerate the transfer of climate friendly technologies, there is a need for the international community to keep a watch on patents to ensure that they do not price-out eco-friendly technologies to developing countries. It is also essential to promote technical assistance, capacity building and innovative financing mechanisms to promote competitiveness and resilience of small island economies. This can happen only through concerted global action. The Alliance of Small Island States, AOSIS, is an intergovernmental organization of low-lying island states of which Mauritius is a member. It has 43 members and observers which represent 20% of the membership of the UN. However this organization has no permanent structure and meets loosely in the margins of international meetings without any specific mandate. **Mauritius, which has been an active member of AOSIS, should take the initiative to give the Organization a permanent structure which could meet and devise strategies to ensure that their concerns are factored in the decisions of international organizations.**

Because of its factor endowments, Mauritius has no other choice but to depend on international trade for its sustained development. Increased economic activity entails increased use of scarce natural resources resulting in more waste and pollution associated with increased production, consumption and disposal of goods and services. Hence, the need for strong environmental management should be a fundamental aspect of our sustainable development policy. This can be ensured through appropriate control with the involvement of strong institutions with the powers and technical know-how to advise and intervene where economic activities lead to environmental degradation. Also, environmental degradation has a cost to society and those responsible should pay. When something becomes more expensive to do, people do less of it. **Environmental taxes have a double advantage – they discourage pollution by showing what it really costs and they redirect economic activities to processes which are less polluting.** The tax has another

advantage in providing resources allowing the pursuit and expansion of the fight against pollution. Although in Mauritius some attempts have been made to tax polluting activities, they have been too restrictive. The approach to taxation should be innovative and based on:

(a) the type of use and level of disturbance of the environment;

(b) the resource used (renewable or not) and the volume used.

It has been argued that environmental protection is detrimental to economic growth. We argue that there is no contradiction between economic growth and the environment. Environmental protection in itself is positive for sustainable development. **However, with global concerns on environmental issues and their impact on international trade, moving our development strategy towards an environmentally sustainable strategy with enhanced economic efficiency and competitiveness, the most important levers of economic growth, will create more and better jobs, and greater social cohesion.**

INNOVATION

Innovation is a vital element in ensuring growth and competitiveness. The latter is the key to future growth of firms, industries, and countries. A country's competitiveness is in turn the direct result of the competitiveness of its firms.

The concept of innovation encompasses not only "technological innovation", i.e. the diffusion of new products and services of a technological nature into the economy, but equally, it includes non-technological forms of innovation, such as "organization" innovations. The latter include the introduction of new management or marketing techniques, the adoption of new supply or logistic arrangements, and improved approaches to communication and positioning.

Drivers of change

The overall context in which innovation will take place in a country like Mauritius is dominated by two global drivers. The **first** one is the intensification of the globalization process. Spurred by the revolution in IT, this globalization manifests itself, among other things, by the importance of trade within the global economy. It has also reduced significantly time and distance throughout the world, linking the most remote to the most vibrant areas. The **second** driver is the intensive ongoing technological change stimulated by fast scientific advances. As a consequence of these changes, a new development era is gradually taking shape, replacing the industrial one.

This new era presents us with both challenges and opportunities. These challenges are accentuated by the fact that the development process requires more knowledge and entrepreneurial spirit to compete in an environment of intensified competition. The opportunities arise from the possibilities for modernization of traditional activities offered by new technologies or to put it simply **doing things differently** or "**the smart way**".

Innovation is thus the result of numerous interactions between business sector actors and state institutions, which together form what are called national innovation systems. Increasingly, these innovation systems are extending beyond national boundaries to become international. Basically, they consist of the flows and relationships that exist between industry, government, academia and research institutions.

Innovation also requires considerable communication among those different actors – firms, academic institutions and consumers – as well as feedback between engineering, product development, manufacturing and marketing.

Our way forward will be through economic competitiveness. Research and Development (R&D) is important but innovation is crucial to economic competitiveness. Innovation is much more than R&D.

Upstream of R&D, we must do more to stimulate SMEs and firms engaged in services to innovate by showing them the benefits. Downstream of R&D, we must do more to help SMEs to get to the regional markets, raise capital, and access the African regional groupings.

To keep up with the competition and to gradually climb the value chain, improvements will be necessary in quality, marketing, organization, and logistics.

The innovation issue in Mauritius is unfortunately hampered by weaknesses of other key elements of knowledge-based economies, namely, levels of educational attainment, the business environment and the information infrastructure.

On the knowledge side, there is generally a limited research community, operating usually in an ivory tower, and a university system poorly connected to the realities of the productive sector. Particularly problematic is the lack of technological support to services and infrastructure.

Priorities should be geared towards:

- Enhancing knowledge management diffusion – Support to innovation will need to be broadened and include providing the framework conditions for university-industry-research organizations collaborations, promoting the diffusion of new technologies to a wide variety of sectors.
- Upgrading human capital – Policies will be needed to promote broad access to skills and competencies. This includes providing individuals to engage in continuous training and improving the matching of labour supply and demand in terms of skill requirements.
- Promoting organizational change – Translating technological change into productivity gains will necessitate a range of firm-level organizational changes.

Independent institutions: their importance and role

There is need to create independent institutional mechanisms and build human resources to harness knowledge and put it to effective use. In a new era of emphasis on competence building and enhancement of human resources, research and higher learning institutions

must play a greater role. Policy efforts should therefore go towards building and strengthening the capacity of institutions of higher learning to solve local problems.

In order to establish an enterprise-based, market-oriented technological innovation system characterized by industry-university- research institutions collaboration, firms should be supported in their efforts to collaborate with institutions of higher learning and research to jointly establish the development of industrial innovation projects.

Government need to support institutions of research and higher learning as well as enterprises in enhancing the selection, evaluation and protection of innovation projects, encouraging technology transfer. **One of the ways is in the creation of a diversity of autonomous business-led innovation organizations geared towards support for business development, technology, SMEs competitiveness, diversifying their customer base.**

As previously stated, the way forward will be through economic competitiveness, through priority action in the following sectors: textile, port and telecommunications.

The textile and apparel industry in Mauritius has shown a number of weaknesses that should be addressed as part of a strategy for survival in the global market. The main elements that should be addressed are poor productivity and ineffective management of many companies in the industry. This means putting in greater efforts in terms of both production processes and financial restructuring. At the same time, firms need to take advantage of Mauritius as a reliable platform that provides a broad range of services that international merchandisers are on the look out in their quest to restructure and move into higher value added activities. Key obstacles to this are access to financial resources and a scarcity of skilled technicians. This industry faces the paradox of experiencing high unemployment and dependence on foreign labour.

Telecommunications services and connectivity are vital to various sectors as they seek to mitigate the negative impacts of our geographical location. The services increasingly required by growth industries and buyers are placing a premium on obtaining and managing information so as to effectively implement strategies for outsourcing, back office work, design and sourcing. The cost, quality and reliability of telecommunications services are therefore essential in this regard.

The Port, Tourism and Financial services are all sectors with the potential to drive growth back to higher rates. **Unfortunately, we have on the whole inherited outmoded organizational structures that have served Mauritius well in the past but are ill-suited in this globalization era.** Unless we address the current bottlenecks and pricing structures adequately, Mauritius will be unable to provide the solid foundations required to the sectors which are expected to power the economy in the future. Tackling monopolistic pricing on international connectivity is essential. And on a longer time frame, introducing competition in handling and conveyancing cargo could cut costs and help to build Mauritius as a regional hub. Air cargo and cost effective tariffs are also becoming vital to the textiles sector, where rapid delivery of high value products is critical.

Opening the services markets may not automatically generate competition without strong pro-competitive regulation. **The Information and Communications Technology Authority (ICTA) should be strengthened to ensure a competitive market, while air transport requires expert monitoring through a solid regulatory framework whose establishment is still awaited.**

Financial Services

With global competition in the export of goods becoming more severe as a result of trade liberalization and our particular factor endowments, financial services should be developed as a main driver of our economy. Despite the fact that the financial sector has been consistently enjoying double digit growth over the past decade, much remains to be done to put Mauritius on the same level playing field as established and other competing financial centres in order for us to become an important regional, and ultimately, international player in the sector.

The first area that requires immediate attention is **education and training**. There is a definite mismatch between demand and supply. Under the Financial Services Development Act 2001, one of the roles of the Financial Services Promotion Agency (FSPA) was to '*prepare and implement a plan for human resource development and training in the field of financial services*'. A few years ago, the FSPA organized a number of short term and *ad hoc* training courses which were directly relevant to the financial services industry as well as a Diploma in International Tax Planning course. However, the present government scrapped the FSPA. There is a need for a global policy on training for the financial sector. The government and the private sector should collaborate to devise, implement and finance structured courses which will enhance the skills of our professionals.

We should also attract foreign skilled labour to train our work force and cause a transfer of knowledge, thereby making our financial sector more competitive.

However, education and training, though essential, are not sufficient to ensure the long term viability of Mauritius as an international financial centre. We will need product innovation and product differentiation. Mauritius already has double taxation agreements ("DTA") with 33 countries. This is not sufficient. We should be expanding our network of DTAs. **There should be an institution dedicated solely to negotiate and conclude DTAs on the most competitive terms possible**. We should keep abreast with international development and regularly update our regulatory framework to remain competitive. We should provide tailor-made solutions to institutional investors and high net worth individuals to attract them to use Mauritius. For example, **Mauritius could implement a tax efficient product that would encourage artists and sportsmen to be resident in Mauritius for part of the year.**

We should also attract more international banks and financial institutions. International names provide more comfort to institutional investors. They also have a portfolio of existing clients whom they can persuade to route their investments through Mauritius. **Attractive tax breaks and other incentives could be given to attract these institutions.**

Once we have developed such instruments and the capacity to deliver, we should then market our financial products and services. This role used to be fulfilled by the FSPA. After the current government scrapped the FSPA, the Board of investment was supposed to fulfill this role but did not do so as it had other priorities. It is necessary to have an institution for the promotion of the financial services like the tourism sector has its own promotion agency.

The path ahead

The private sector can provide much of the needed investment in the different sectors, but government investment will also be required in education and training to upgrade skills of the workforce. This will go a long way to assist the current growth sectors and will create the conditions for launching new growth niches in the years to come.

We have to further ensure that education and training deliver appropriate knowledge and skills. **Increased investment in education and training is essential** to enable Mauritius to move towards a knowledge-based economy and to build up human capital, infrastructure and innovation capacity that will permit our country to compete globally and thus create sustainable economic growth that benefits all sectors of the Mauritian society.

Innovation policies touch many aspects of government responsibilities. They cut across department frontiers, within which specialized in-depth knowledge is accumulated but not interconnected. **Hence, it is important not only to provide the necessary package of support – technical, financial, commercial and legal – but it is also vital to establish efficient institutions and organizations that will work in close collaboration to deliver needed support to innovators.**

To enable us to become a competitive economy, capable of operating in the global market, innovation in all the production sectors becomes vital. Financial and human resources will be a key to achieve this ambition.

The modernization of the social infrastructure, the development of an innovative productive apparatus, the creation of a sustainable economy demands considerable resources.

Regional and International Cooperation

In this world of interdependence and liberalized economy, no country, especially a small economy like Mauritius, can go it alone. In the face of the glaring imbalances that pervade the world, Regional and International Cooperation is the path that is essential. How then does Mauritius fit in all of this?

The fundamental principle to ensure success of regional cooperation is to create the necessary conditions for all participating partners to operate in a 'win win' situation and ascertain that none is worse off than before. Obviously, some losses are bound to be experienced but the overall result should be one of positive changes through the cooperative effort. It is in that perspective that any regional cooperation scheme in which

Mauritius participates should be based on the comparative advantage principle thereby providing space to participating countries to specialize in those activities in which they have proven experience and efficient capacity.

To that extent, it is not simply a question of our belonging to the Regional Cooperation Organizations or attending meetings thereof, but rather the contribution that we can make to render the scheme viable and profitable. In so doing, some choices will have to be made. Care must be taken not to be perceived as being solely self interested. In certain circumstances, we will need to adopt stances demonstrating solidarity with the rest of the region even if, on the face of it, a particular issue is not of direct concern to us. Mauritius has not always played well in this game. The underlying factor in our approach to Regional Cooperation should be based on mutual respect, itself underpinned by mutual accountability. It is an arduous task but not impossible. In that way, one is bound to earn the respect of the other players and emerge among natural leaders in the scheme.

What then should we be pushing for in as smooth a manner as possible without appearing to be overly aggressive? We believe that in the given circumstances of small markets and size of the individual countries of the region, efforts should be geared towards making the region self sufficient in feeding the population of the participating countries. A feeble attempt is being made but this needs to be accentuated to move the venture out of the bilateral perspective so as to bring on board other countries of the region, members of the same regional groupings. For such a policy to bear fruit and literally make the 'win win' situation a reality, **political will** needs to be prevalent throughout, notwithstanding the fact that certain difficult political decisions may have to be taken at times.

As mentioned earlier and in that perspective, it is not only a matter of membership in the regional groupings that should guide our steps as we compete in this globalised world, but rather the quality of that membership, that is what we take there as contribution and what we bring back for the benefit of our population. It is a fact that some of these Organizations are perceived as being passive. This is where Mauritius could play a certain determining role and help to revamp them. To achieve -this we will need to invest substantially in our human resources and enhance our capacity in that sector in an ongoing manner.

The potentialities for regional cooperation exist for us cover a wide range of sectors, including, among others, agriculture, fisheries, nature conservation, tourism, trade in goods and services, science, culture, education etc. However, emphasis should be placed on a selected number of fields, to wit, in the manufacturing sector where high Value Added transformation of products should be favoured, agriculture, fisheries and services.

It is also important to explore new avenues of cooperation and in that context, more consideration needs to be devoted to forging affective relationships with such groupings as SAARC and ASEAN. Similarly, more attention should be focused on the Middle East region which has vast opportunities for meaningful and effective cooperation.

The concept of **triangular cooperation** is yet another avenue that needs to be pursued more assiduously with investments and transfer and absorption of technology from the

North or Emerging Economies (India, China etc.) for manufacturing locally and export to the region.

Indeed, ***as our entrepreneurs – in partnership with foreign investors from both the traditional countries in Europe and North America as well as the more advanced countries of the South respond to the freer flow of goods, capital and services within the region and build up supply capacity in terms of productivity, scale and scope of production and marketing, we will become more able to exploit global opportunities in a gradual step by step process of integration into the world economy.***

Regional economic integration is not only the strategic way forward for us but must become our response to the imperatives of economic globalization.

It is only in that manner that we will be able to face the vagaries of interaction at the international level. Again, we will need to place more emphasis on the quality of our participation at the level of the international organizations to which we belong, principal among those, the UN, the AU, the WTO, the ACP, the Commonwealth, the Non-Aligned Movement, and La Francophonie. There simply would be no point in just attending meetings at those levels if we cannot use such avenues in the better interests of our citizens. Our diplomacy will have to be reviewed and reformulated in that perspective if we want to make a difference for our country, its citizenry and future generations to come.

To prepare ourselves to play such an effective role both at the level of the region and at the international level, the following fundamentals will have to be reinforced and upheld consistently and constantly locally: principles of democracy, effective participation of the civil society in the decision-making and implementation process, accountability, transparency and the rule of law.

Economic Sustainability

Two important pillars of economic sustainability are food security and energy security. On both counts, Mauritius faces difficult challenges. Although some attempts have been made on both fronts in the past years, with the non-sugar sector strategic plan 2003 – 2007, and specifically in 2005, on the occasion of the UN Conference on Small Islands Developing States (SIDS) with proposals to address the issues of food availability, and for managing supply and demand of electricity, the problem of food and energy security remains intact.

Food Security Issues

Mauritius, on account of its limited size, the absence of economies of scale and the high comparative advantage of sugar cane in agro-climatic, environmental and economic terms, is compelled to import essential food items, namely cereals, wheat/flour and rice, pulses, edible oil, meat and dairy products and spices. Inputs for the poultry and egg industries where Mauritius has more or less attained self- sufficiency, for instance maize,

have to be imported. Mauritius also imports fruits as well as a fair proportion of its potato, onion, garlic and ginger needs.

On the import side, Mauritius is already facing and will have to face a triple challenge: firstly, the rise of the cost of fossil fuels and the attendant rise in the cost of chemical inputs for agriculture, fertilizers and pesticides; secondly, the increase in the cost of food and worse, the risks of security of supply; and thirdly, the rise in consumption envisaged in the tourism and leisure sectors.

Local Production

Locally, production has been mainly undertaken by small planters who are quite distinct from sugar cane planters and in addition better risk takers. Sugar companies are also engaged in two capacities: firstly, production of some vegetables and potatoes and secondly, lease of land to small planters.

Four lines of action stand out:

(i) the right mix between sugar cane, energy and export earning crop, and food crops has to be struck; the implementation of the provisions of the SIE Act 2001 and past practice will enable this balance to be achieved;

(ii) the production of vegetables has to be stepped up to meet the enhanced demand from tourist and a more health conscious population;

(iii) the spectrum of products offered has to be broadened; and

(iv) action on demand to reduce per capita consumption of carbohydrates and fats and enhance consumption of fruits and vegetables. This would imply a shift away from rice/flour and movement towards potatoes.

In fact, the availability of land for local production remains the key.

Here again, land under sugar production can provide part of the solution. It is possible scientifically to ensure that the management of sugar production has also the aim to produce more food.

The land under food crops production can be increased through rational exploitation of sugar cane lands, either in inter-row or between two crop rotations. This, however, will not be sufficient. What is needed is to use land meant for long season's canes and to extend their use by some six months so that some 3 to 5,000 hectares could be put under food crops every year. Sugar output will be reduced but with better varieties, the amount of sugar lost and bagasse available could be compensated. This area would boost up food crop production, provide jobs and maintain food at reasonable prices to consumers through the year.

Organic food crop production represents an area to be thoroughly investigated for niche products fetching high prices on foreign markets. An important corollary to that is the proper allocation of water resources, where needed, since food crops which are of short cycle are particularly vulnerable to drought.

New type of food crops including fruits species will have to be imported to boost up production and provide a broader range of tropical products for the locals and the tourists.

Food Production in the Region

Economic conditions are such that at best Mauritius can move to enhanced production of vegetables and fruits locally but will have to rely on the region for imports of the bulk of the food it consumes. Accordingly, Mauritius can only aspire to find the food it needs, upto a certain level, from regional cooperation. In the region, four countries stand out: Mozambique, where Mauritius has been granted a concession of some 100 000 hectares; Madagascar, which has approached Mauritius for co-developed projects; Tanzania, where the CIEL group is well-established in the sugar cane sector; and Zimbabwe, which to every reckoning can be the granary of Africa and where Mauritians have greatly contributed to the development, till recently, of the agricultural sector.

For the time being, developments are more likely in the first two countries. Tanzania is very likely to produce for the Eastern African Community. Zimbabwe is likely in the coming years, conditional on political and social stability, to produce first for its own population and for the neighbouring LDCs.

One key issue is to make sure that Mauritius has priority of access to the food it produces in those countries where it is investing. Here, investment and import guarantee agreements are crucial.

However, the issue of regional food production poses many challenges. Many of the areas for production are devoid of proper infrastructural facilities like roads, storage and handling facilities and harbour installations which are essential. The investment costs to solve these problems can be prohibitive.

In the region, we can identify supply side countries namely Madagascar, Mozambique and Tanzania and demand side countries – Mauritius, Reunion, Comoros, and Seychelles. In view of the scale of the activities needed, only a meaningful coordinated regional project which can interest international financial institutions to provide necessary investment can have a positive impact on regional food security. **It is essential to elaborate a joint venture between the demand side and supply side countries mentioned above, to which can be added the United Arab Emirates.** The UAE has already indicated its ambition to ensure full food security and can bring in capital and the potential market of the Gulf countries. **Such a project would be in line with the approach of the EU and the World Bank whose support can thus be guaranteed for investment.**

Who does what

An important issue to be addressed is whether sugar companies which have the right type of land, the logistics and the expertise should be called upon to move further in food crop production or should we stay in small scale production based on the small planters.

The agricultural sector at large is constrained by the rising costs of inputs and the unavailability of labour and its high costs. In most cases, mechanization of operations is essential. Medine S.E, after having been a pioneer in this regard, is now a major producer of vegetables where each and every agricultural operation is mechanized. Many other sugar companies have prepared their land for full mechanization of cane cultivation. In fact, once land is thus prepared, it is equally suitable for food crop production.

Every support should be given to small planters on their traditional agricultural activities but they have to be brought into large scale commercial agriculture where the profitability is much higher than in the cultivation of small holdings, land, logistics and expertise, for large scale food production lies with the sugar estates.

Hence, what is needed is a strategic partnership between the sugar estates and the small planters' community if food production for food security and ultimately exports of high value fruit and vegetables is to be attained and benefit the agricultural community as a whole. The government should be instrumental in setting up such a partnership through a national food crop production company with equity participation of both the planters' community and the sugar companies.

As we can see, the issue of food security involves many aspects and only an integrated rather than a sectoral approach can help us achieve our aims. **Today, the situation makes it imperative that we come up with a Food Security Strategic Plan involving both local and regional players.**

Energy Security

No sustainable development policy can fail to put the issue of energy security as one of its top priorities. This issue is one of vital importance to Mauritius. Imported fossil fuel accounts for more than 80% of our energy requirements. The high prices of petroleum products which are expected to maintain themselves or even increase as demand grows with the end of the economic crisis and environmental concerns dictate a policy of reduction of dependency on fossil fuels and a greater role for renewable energy.

In recent years, the production of electricity from bagasse and to a much lesser extent, the use of solar energy has not progressed. With the reform of the EU sugar regime and the increase in the use of ethanol in the world, great attention has been given, under the MMM/MSM government, to a reform of the sugar industry under the Sugar Sector Strategic Plan, into a fully defined sugar cane industry with emphasis on, *inter alia*, the production of ethanol and the production of electricity from bagasse. The implementation of the plan has led to centralization of sugar factories and the objective is to set up flexi-factories which can produce sugar, ethanol as well as electricity. The process in ongoing but the policy of the government towards ethanol use is still unclear and has to be defined rapidly.

The energy issue is two-fold. There is first the issue of electricity and then the availability of fuel for land and maritime transport, and industries. Both issues should be treated

separately.

Any policy for energy security should not only focus on the availability of energy resources but should also take into account the environment aspects and affordability to the users.

In the field of electricity production, various possibilities exist but in the context of a policy of sustainable development, the issue of renewable energy should be at the core of our energy policy. Renewable energy use has been with us for a very long time (hydro-electric production) but in recent decades, the increase in the demand for electricity has led to an increase in the use of fossil fuels for electricity production. However, whilst there has been a marked disinterest in hydroelectric production because of lack of hydro-resources, the use of bagasse is today occupying an important part of our energy strategy. It is, however, worthwhile to point out that there is unanimity among all stakeholders that the future strategy should be based on renewable energy. A recent study (NESC blueprint for the energy sector) states that the objective is for renewable sources to reach 65% of the energy mix for electricity production by 2028.

Various studies carried out over many years have indicated the potential of solar energy, wind turbines photovoltaic cells and biogas production as energy sources. However, further studies need to be carried out on the appropriate technology and cost-benefit analysis of each of these elements for a renewable energy programme because, ultimately, affordability becomes a decisive factor. Upfront costs, in view of expensive technology, are an important barrier to investment and the high cost of production may render the project unaffordable. Thus, unless there is a programme of subsidies, the project will not be viable. However, it should not be forgotten that the environmental and security aspect of the project weigh heavily against costs consideration alone. Similarly, the project for small-power producers, although attractive in nature, will not take off without a grid code to define the rights and responsibilities of the parties who wish to produce electricity.

Nevertheless, our real source of renewable energy is our biomass in the form of the sugar cane. Bagasse is contributing today to some 20% of our electricity and from our molasses some 33,000 tonnes of ethanol could be produced annually.

Our annual consumption of gasoline being some 101,000 tonnes, a fair share of this could be replaced by ethanol, first with E10 mixture, then going up to E20. Eventually, flexi vehicles especially cars which can run on higher level of ethanol up to 100% will have to be imported to decrease our imports of gasoline. We consume some 350,000 tonnes of diesel and the prospects of producing bio-diesel in Mauritius are remote at present. However, buses running on ethanol, as is the case in advanced countries like Sweden, could be resorted to.

It should be borne in mind that the contribution of electricity to domestic, industrial and transport activities will be ever increasing. For domestic and industrial uses it is estimated that some 3,000 GWh will be needed in 2015.

Bagasse represents today some 500 GWh annually. However if all four of the sugar factories are equipped with high pressure boilers of 82 bars and steam at 525^{o} C, as is the

case at Belle Vue and La Baraque (Omnicane), the output could go up to 700 GWh.

Biomass in terms of trash and cane residues left in the field should be exploited. Today the amount of such biomass is estimated at 950,000 tonnes annually. If half of this is actually transported to co-generation plants, some 260 GWh of electricity could be produced, thereby reducing our reliance on coal, and catering for our increased demand in energy. The remaining half of this biomass would be left in the field for conservation purposes and to alleviate use of herbicides for weed control.

However, bagasse and trash would represent only one-third of our demand for electricity in 2015. It is, therefore, imperative to increase not only the amount of sugar to allow our industry to keep its critical mass through production of varieties with higher sucrose content called high quality cane, but also important to produce varieties with higher fibre content called High Fibre or Energy fibre and using available technologies for more electricity to be generated.

But, to really make a quantum leap, what is needed is to resort to new technologies such as gasification which can double the amount of energy from sugar cane biomass. Other advanced technologies have also to be investigated for their applicability to bagasse ad cane trash. With such technologies applied to High Fibre and Energy Cane, Mauritius can be self-sufficient in electricity to a tune exceeding 3,000 GWh.

Second generation products could also be contemplated with increased amount of fibre: Thus development in cellulosic fermentation of biomass must be closely monitored to ensure that when such technologies become available, they are put to use to ensure a higher output of ethanol for our transport needs.

Sugar Cane – A Crop for the Future

We need a new sugar cane agriculture to address economic and environmental issues. Our 264 years of experience in that crop must be put to optimum use. The investment in R and D must be enhanced to enable the sugar cane industry to play fully its multi-functional role.

Among the various societal problems of our times, two of the most important are climate change and global warming which are bound to affect us. **We are lucky to cultivate sugar cane on such a large scale since it is a net sequester of carbon dioxide at a tune of 20 tonnes per hectare per year. Thus it is intervening in reducing greenhouse gas associated with global warming.** More and more it is being realized that biomass represents an alternative to fossil fuels and this has created a huge interest in sugar cane, probably the best crop to replace partially fossil fuel through electricity co-generation and ethanol production. The recent venture of multinational companies such as Monsanto which has acquired and invested into a sugar cane research institute in Brazil and the European giant Syngenta which has set its laboratory at the Queensland University of Technology, is proof that these multinationals and others (BASE, Dupont, Bayer) have sensed that sugar cane is the crop of the future.

Investment in R & D must therefore be, enhanced to meet out challenges. New cropping systems must be developed as up to now we have been applying nitrogen fertilizer to boost yield but not all of this nitrogen stays in the soil and some of it ends in the atmosphere as greenhouse gas. A carbon friendly sugar cane industry must be the order of the day. Green manuring with legumes on a large scale should be adopted to reduce inorganic fertilizer use, bring down cost of production and be more environment-friendly.

This is where biotechnologies have important roles to play. Sometimes, biotechnology is assimilated to genetically modified organism (GMO), on which there is an emotional debate. But biotechnology is not only genetic modification. Other advanced biotechnologies should be put to use for the advancement of sugar cane and other crops.

Such technologies can yield superior varieties of crops more quickly and in higher quantity. These technologies are not controversial and efforts should be put into investigating their exploitability without delay. This raises the question of education and scientific research. It is evident that our best brains are not attracted to agriculture and scientific research. These issues will have to be addressed, as they are critical to our development.

Energy Efficiency

Energy efficiency and renewable energy are the two pillars on which any sustainable energy policy stands. Sufficient energy use is achieved primarily through more efficient technology and hardly involves any change in human behaviour. The potential for making houses, vehicles and businesses more energy efficient and hence increasing energy security is largely untapped. Unfortunately increasing efficiency has been neglected in favour of increasing power generation. Indeed, a recent study published in the U.S.A pointed out that in industrial buildings, there is a realisable potential to save 70 – 90% of the energy and cost for lighting, fan, pump system, 50% for electric motors, and 60% in areas such as cooling, office equipment and appliances.

Although there is awareness of the need for energy efficiency measures, yet in Mauritius only timid measures, like the subsidization of energy-efficient electrical bulbs, and solar heaters have been introduced with only a limited impact or our energy demand. However, there is a need for a real policy at reduction in energy use in buildings electrical appliances, vehicles and industry. **An appropriate legal and institutional framework should be put in place together with a policy to subsidise the cost of energy-efficient technology, which can be expensive. This is a question of economic priority and political will and is the only way forward.**

The Human Dimension

Development is not growth and Sustainable Development is not only growth which respects environmental realities. In fact, contrary to some decision makers who view development in terms of economic indicators e.g. GDP growth, average annual income,

we should be adopting the definition of Nobel Prize Winner Amartya Sen who argues that development should be viewed in terms of real 'freedoms' that people can enjoy such as economic facilities and social opportunities. Hence the focus of development should be on individuals' needs and aspirations. **Therefore, our recovery and adaptation plan for development after the world economic crisis is over should address the social and human dimension of the crisis through support for the vulnerable, including labour market policies, skills development, income support, effective safety nets, pensions, education, enhanced training projects and opportunities for all in all fields of life.**

The crisis should act as a catalyst for much needed reform, generating both environmental, employment and economic gains and social welfare.

Paradoxically, the crisis can inspire us to shape the foundations of what we want our country to look like in 20 years. Hence, the need to invest in social infrastructure if we want to ensure that economic development benefits the vulnerable and poorer classes of our society. The emphasis should be more on collective solutions rather than individualism. **We have to do different things differently to create a strong, viable, innovative and just society to meet the challenges posed by the new world order**.