

## **SESSION 3: GROUP DISCUSSION REPORTS – DAY 1**

## A. Food Security Thematic Discussion Group

Chair: *H.E. Dr Parisak*, Lao PDR  
Facilitator and Rapporteur: *Dr Mark Rosegrant*

The main question for this group was how to achieve sustainable food security in the GMS. Some of the priority actions identified are: promote productivity and income growth in agriculture and rural development; invest in roads and irrigation in rural areas; help make markets work better for the poor through improved value chains; promote improved diets and food safety; remove biases against the poor in public spending, taxation, trade, and regulation, where there still exists in many countries a bias towards urban and industrial development relative to agriculture; develop human and physical assets of poor people through education and training, one of the big cost-cutting policies; and use market-based or incentive-based approaches to manage water and environmental services, combined with securing property rights for land and water to preserve the ability of farmers to take advantage from their own innovations.

On agricultural productivity, there are three key areas for food security: (i) increasing crop productivity through agricultural research and extension, (ii) farm management, and (iii) rural investment. In the area of research on crop and livestock breeding, the key is to increase investments significantly, including in both biotechnology and local farmers' knowledge and expertise. In the face of excessive use of many inputs and climate change, specific aspects can be targeted, such as nitrogen-use efficiency, abiotic stresses like heat and drought, and such biotic stresses as insects and disease.

At the farm management level, many things can be done to improve the sustainability of agricultural production and to reduce harmful effects of intensification. Some of these are water harvesting and precision agriculture, which allows much better targeting of inputs and management efforts. Three to five years ago it was thought that there would never be precision agriculture in Asia, being too difficult and too capital intensive. However, it is now being used in large areas in India for example, such as land leveling and use of global positioning system (GPS) to help target inputs. Its use will undoubtedly grow in the GSM as well. Minimum tillage systems, integrated soil fertility management, and integrated pest management can also

help reduce the amount of inputs while sustaining growth of productivity. Another key area is to promote policies and investments to reduce postharvest losses. Directly connected to reducing postharvest losses is the need to improve rural infrastructure investment to help improve access to markets, information, credits, and inputs and to provide positive conditions for private investment.

To a large extent in the food sector, good policies for climate change and adaptation are good policies for agriculture development in general. Some of the key areas here are: to implement knowledge, information, and risk-sharing approaches to support flexible farmer adaptation and that is not only related to climate change but also related to variable prices in a changing world climate for agriculture. Greater investments are needed in climate-sensitive traits and protection against climate variability and extremes. Support for open international trading regimes is needed to share climate risk, which also gives farmers in the GMS access to global markets. A large part of that work has to be done by the less economically developed countries (LEDCs) is policies on trade and subsidies. There is a need to improve spatial targeting, with much better data and resource systems to account of highly variable climate change impacts, by crop and location. Another key area related to overuse of inputs is to reduce perverse agricultural subsidies on biofuels, water, energy, and fertilizer that can distort the decision making of farmers and reduce productivity growth.

There is also a need for economic incentives for efficient water use, like establishing firm, tradable water rights for users. Direct water price increases may be punitive to farmers and irrigation users; but Australia and Chile have designed pricing mechanisms by which irrigation users are paid to use water efficiently and they use those payments to organize production more efficiently. The same need arises in the creation of market for ecosystem services as Jeff McNeely noted yesterday. So for watershed management, biodiversity, and other environmental services, there is a need to start valuing those services that are now not measured in the market system. We need to develop markets for agriculture and forest greenhouse gases (GHGs) to generate new values in rural areas through GHG mitigation, such as soil sequestration. These will still need to be coupled with policies for creation of conservation reserves and protected areas.

There is a need to prioritize across these policy options. A big question is: who does what? With these kinds of policy options, to what extent should they be undertaken

by regional organizations, such as ASEAN or the GMS, or at national, subnational, and local levels? There is a need for good governance, including regional integration across the countries, cooperation, and planning. Directly related to that is political and economic stability. The other issue is how to move from policies and plans to implementation; this often appears to be the weak link. There is also a need to improve information and data systems, including use of remote sensing and GIS; to integrate data systems across countries and regions; and establish early warning systems for price variability, famine, and weather forecasting. A strong point made by a number of participants was that we need now to better integrate fisheries, trees, and forests into the agriculture sector; there needs to be much more holistic planning and policies rather than having these in different ministries. And finally there is a need to do explicit targeting of poor and small farmers for the process of technology transfer and support services.

## B. Land, Water, and Climate Change Thematic Discussion Group

Chair: *H.E. Mr Ros Seilava*, Cambodia  
Facilitator and Rapporteur: *Prof. Peter Rogers*

Many issues discussed in the Food Security group are very salient to the discussions of this group. In particular, the integration aspects of agriculture, fisheries, and forestry with the changing hydrology and ecosystems of the subregion and the choice of appropriate technologies. There is a lack of integration across the different ministries and agencies in these matters. There is uncertainty introduced by climate change. Too much of the effort in the water sector has been on conventional, surface water diversion works, which are very hard to do in a monsoon area; too much is subject to very high rainfall and flooding followed by extended dry periods. It is hard to achieve optimal use in countries that do not have a tradition of management and maintenance of these facilities. The issue is the choice of right technology for the changing conditions in the area. A lot of discussion focused on small farmer irrigation systems as experienced in other parts of Asia, for instance in West Bengal, Bihar, and Bangladesh, where lift irrigation (wells) is done by the small farmers themselves with a huge amount of government support.

Next was the need for ways of forecasting consistent land-use change in relation to the change of environmental and economic conditions. The name of the game in this

subregion and many other parts of the world is land use. How is land use going to change? How is forest going to be changed? How is agricultural land going to be developed? We had a technical discussion on GIS-based land-use modeling as a case study from an area in the GMS showing plausible land-use changes over time. In a similar vein, the urgent need for drought management techniques in a subregion where most of the effort has been on monsoon and flood control and excess water drainage, was mentioned. The GMS does not have meteorological drought like in arid regions, but there are changing rainfall patterns during the monsoon season and also in other rainy parts of the year, leading to dry areas around the subregion. There is a need to zone land areas for drought and flood potential to improve drought and flood management. There was more consideration of the international political context and the resolution of conflicts among the GMS countries and those within countries that have an important set of non-transboundary issues within a transboundary setting, which ultimately affect the rest of the Mekong River Basin.

Four areas were suggested for recommendations: (i) projects, (ii) policy and governance, (iii) institutions, and (iv) research. Monitoring programs could be specific projects getting better data on the performance of various sectors and better data on climate. There are very few serious climate monitoring stations within this subregion compared to Europe and the rest of the world.

More Clean Development Mechanism (CDM) projects, particularly on the transboundary hydropower programs in the subregion were needed as it was pointed out that 90% of the CDM funds go to two countries—the People's Republic of China and India; less than 10% is spread among the other countries. Why don't the GMS countries go after the large funding available for CDM projects? And particularly, since there are a lot of hydropower developments in the subregion, there is a nice trade-off between GHG and positive and negative impacts of development.

The next area of recommendations was policy and governance. Basically the discussion in the group underlined that climate change policy was not mainstreamed in the individual countries or in the GMS itself. We need to encourage climate policy to be consistently addressed in all of the activities of the GMS. Climate change models need to be based on similar sets of data and projections and scenarios; currently there is a wide variation. We should exploit mitigation and adaptation synergy; too often we see these two pitted against each other. Some mitigation aspects related to forestry could help in adaptation of agriculture.

Flexible adaptation approaches are needed, especially by learning from mistakes and being aware of the high risks and consequences of failure in adaptation measures. Unfortunately, we often do not learn from our mistakes. Benefit sharing and costs need to be transparent. An integrated water resources management (IWRM) approach is required but how much is actually applied is unknown.

Legal, institutional, and organizational mechanisms are needed in order to allow progress, for example in dealing with land use, land ownership, property rights, and communal property rights, which are very difficult issues in many countries of this subregion. There were also calls for setting up a GMS working group on water. Apparently, the GMS has working groups on all sorts of things except water. Building capacity for policy making and implementation to attract financing to the subregion need a consistent approach, some it involving transboundary issues. The private sector needs to be assiduously courted, particularly for modernizing agriculture. Precision agriculture, referred to by the previous group, requires capital investment; there are people willing to undertake those investments provided the legal, institutional, and organizational mechanisms controlling concessions, land use, and contract farming provide a conducive framework.

Finally, more scientific research on climate change and impacts in the GMS is needed, specifically down-scaling models and developing models for adaptive management. More studies on policy and implementation are needed, but not just focusing on projects. We also need to know the right costs and benefits.

## C. Energy Thematic Discussion Group

Chair: *Dr Daovong Phonekeo*, Lao PDR  
Facilitator and Rapporteur: *Mr Anthony Jude*, ADB

The energy thematic group had much discussion on the nexus between food, water, and energy security. In that context, many issues were raised: very clearly, energy demand is growing and will continue to grow within the GMS; some countries are growing at double-digit rates; hydropower is likely to be one of the potential sources of meeting the demand of growth in the subregion. In the context of energy security, how do we manage that? There is a need to undertake a careful planning process. Thailand is highly dependent on gas and it is natural for Thailand to diversify; some of the countries in the GMS are looking at diversifying into hydropower and looking at either Myanmar or the Lao PDR. Those issues will need to be managed properly.

Optimization of hydropower development also needs to be done in the context of mitigating social and environmental issues through strategic and integrated development. Lessons need to be learned from Nam Theun 2 and Nam Ngum 3; Nam Theun 2 took more than 10 years to bring to fruition; Nam Ngum 3 was realized far earlier, in less than five years. Most governments will not like to duplicate another Nam Theun 2. We must try to get other hydropower projects integrated into a river basin management approach.

Most of the energy planning today is looking at how many power plants are being installed, for example x amount of coal-fired or gas-fired plants or oil-fired plants. In that context, the discussion was on how to internalize environmental impact costs. Strategic environmental assessments (SEAs) need to be integrated in the power development planning process. Very little has been done in the GMS except in Viet Nam, which has started internalizing SEA through their Power Development Master Plan (PDP 7); this SEA has been done through collaboration with EOC in the context of the GMS Regional Power Trade Coordination Committee work that is being undertaken. The SEA of PDP 7 indicates that by 2030, the environmental costs of atmospheric pollutants will be about \$9 billion per year. If that is not addressed, we will have serious problems in the future.

There also needs to be coordination between energy planning and the ministries of water resources; there is a lack of planning between these two. The ministries of energy plan hydropower projects but they do not take into account what the water resources ministry has to do in terms of water needs downstream and upstream. There is also a need for clarification about data, information, and methods. In some countries, hydropower is part of renewable energy; IEA also categorizes it as renewable energy but for some countries this is a complex issue; another is whether to use clean coal or cleaner coal technology. Planning methodologies were also discussed and how SEA could be increasingly used and how it could be included in a multicriteria decision-making process.

There is also more need for emphasis on energy efficiency and conservation. Energy conservation and energy efficiency are straightforward to address; but most governments do not push that agenda. In the Philippines, for example, we have champions in the former and the current President; so you see some programs of energy efficiency through lighting and the current electrical vehicle program. Energy efficiency is basically considered as an

orphan because it is not within the energy ministry; it cuts across sectors—industry, agriculture, construction, and the private sector; nearly every sector has to be involved. Now there has to be a clear champion; the only country I have seen within the subregion that plays this card very well is the People's Republic of China (PRC). The PRC has created an agency that takes the responsibility of pushing the agenda. We have seen that in a number of provinces, where energy efficiency both in the industrial and domestic power segments has been pushed through. The other GMS countries need to look at how to promote that.

If hydropower is controversial in some countries because of water and food security, then they have to look at the use of cleaner coal technologies. Some GMS countries are looking at coal as an energy source option. But why use conventional technology? Why not move up the technology ladder to using cleaner coal technologies, for example fluidized-bed combustion (FBC) depending on the type of coal available, or use supercritical and ultrasupercritical technology, which actually reduces the carbon footprint? In the discussions, renewable energy was recognized as an energy option but it is not going to meet the base loads; it needs to play a role in the overall energy planning so that it helps to bring the GMS carbon footprint down.

There was also the issue of lack of awareness; the general public is not aware of increasing efficiencies through the purchase and use of energy efficient appliances. A lot of people are unaware that the market already has a 10,000 or 15,000 hour compact fluorescent light (CFL) but these are not sold. In the Philippines, we pushed a 10,000 hour CFL; most countries use a 6,000–8,000 hour CFL; Indonesia produces a 15,000 hour CFL but it is sold not in Indonesia but in Japan. This is because countries like Japan and the Republic of Korea have policies in place that have imposed benchmarks and industry standards; you do not sell any product below the benchmark or threshold. So why can't the GMS look at better appliance standards. Another is LCD screens; these may consume 140–150 watts of energy in some countries but the same LCD screens sold in Japan and the Republic of Korea consume far less, 40–50 watts. Why can't such energy efficient appliances be procured in GMS countries? These are some of the questions GMS policy makers will need to ask and maybe institute some of these policies in their countries.

There were issues concerning health, environmental, and social impacts of energy projects and how to address these. They are basically examined in the context of environmental impact assessments (EIAs). In the context of ADB-funded

projects, governments will need to look at the health impacts, especially from thermal power plants. As one participant from Thailand pointed out, they will not build coal-fired power plants in Thailand but in neighboring countries; those neighboring countries will have to put in standards and enforce them on the private sector. With changes in wind direction, transboundary impacts will be there also.

Recommendations: There was a recommendation to look at the Bonn initiative of 2011 on the water, food, and energy nexus. The decisions taken in one subsector, whether biomass or biofuels, may have an impact on another sector, for example whether to have plantations for rubber or fuel. Another recommendation was to review and apply the Norwegian model in terms of hydropower. The Norwegian model advocates a quick assessment of the assets that need to be protected, like watersheds and river basins, and development of a master plan to protect these. There is a call to internalize environmental and social costs in terms of the power development planning process (PDP). Most PDPs are looked at from a financial point of view; environmental and social costs are not factored in. How do you bring the full economic costing into the PDP? The governments in the GMS need to push this agenda and not just let the power utilities present a least-cost option from a financial point of view only. If we realize the environmental and social costs, a project is going to be far more expensive; it may not be the least-cost option.

Energy conservation should also be included in the PDP, a win-win solution. Most energy planning within the subregion is done by the power utilities together with the ministry of energy; civil societies are not involved. There is a need to bring civil societies and other stakeholders into a meaningful discussion on the rationale for hydropower, thermal plants, renewables, and energy conservation. These are planning issues in which the private sector and academia could play a role. The energy sector should be harmonized with water resource planning.

Biofuels are here to stay in some countries but have negative effects on water consumption; where biofuel production continues, countries should provide clear policies and guidelines on how this subsector will be managed; if biofuels are used by remote communities, the positive impacts also have to be studied. Subsidies for biofuels should not be provided because biofuels should not create negative impacts on land and food security.

The use of multicriteria decision tools should be enhanced. Recommendations on the institutional side were not

made; these are covered in another session. We need to consider all available or possible energy options (coal, oil, gas, renewable energy, nuclear) and approach the power planning system as a whole. Nationally Appropriate Mitigation Actions (NAMAs) were also mentioned as a tool for addressing environmental concerns in the context of using coal and mitigating GHG emissions.

## D. Plenary Discussion

**Nay Htun**, Stony Brook University, New York: These were three excellent summaries. At least in my group all the major points were captured in the report. I just want to make two comments: the first one is addressed to Peter Rogers. You mention there is a need for cost-benefit analysis. I think this is excellent. I would also like to suggest that we take into account calculating the social cost of carbon. Currently, in the United States they are using a range of \$5–\$45 per ton and the average is about \$25; the United Kingdom is using about \$45–\$50; but recent studies by a group of economists put the real social cost of carbon at \$800 per ton. This comment also applies to the energy group. When we are talking about \$9 billion as damage cost caused by air pollutants, if we were to factor in the social cost of carbon (I am not sure what figure, \$25 or more was used), if we were to use \$800 per ton, the figure would be much more than \$9 billion. It is not only air pollutants but also other pollutants. In this context and relating to the energy group, we did discuss the specific role of very fine particles, those less than 1 micron diameter. Recently, a group of researchers presented some reports that suggest the number of deaths in the United States due to secondary organic aerosols has been very much underestimated; there are at least about 50,000 additional deaths. That needs to be factored in as well. Thank you.

**Leeber Leebouapao**, Ministry of Planning and Investment, Lao PDR: I have two comments: the first one is on the food security issue. I think the GMS has a huge potential for food production and so far we have not faced problems; some GMS countries are exporting rice like Thailand, Myanmar, Viet Nam, and now Cambodia. But trends are changing; for example, in the Lao PDR, land for food production is declining because of urbanization, infrastructure development, and land needed for establishing industrial park development. This is a number one challenge. Furthermore, the land prices are increasing. This will lead to food price increase in the future. In addition, there are impacts from climate change, floods, and drought. So there is a challenging issue in the future for GMS countries.

On the subject of policy recommendations, we need to have good land-use planning. In the Lao PDR, food production increased at the same rate as population growth. The growth in agriculture sector, including forestry, was 2–3% but if we take only food, it grew about the same rate as population growth, almost 2.0–2.5%. In future, we need to increase food productivity. On the energy issue, the Lao PDR certainly has quite a bit of potential for hydropower but still relies on oil imports for energy. Also in the GMS countries, we rely quite heavily on oil for energy, particularly petroleum products. But Viet Nam, Thailand, and Cambodia have potential oil resources that remain untapped. May be we can factor them into the energy planning. The question is how to balance the potential in the GMS Vision to 2020 and beyond. I think we can share these resources for the common benefit. Also the proposals made relating to renewable energy are valuable.

**Peter Warr**, Australian National University: I agree with all of the things said by the three rapporteurs this morning and they were excellent summaries. But I want to go further and address something that has not been addressed directly. Behind the title of this conference—Balancing economic growth and environmental sustainability—lies a market failure. The signals provided to decision makers are not consistent with environmental sustainability. That is the fundamental problem. And so I want to see policies designed that address the market failure. Let me give you an example: deforestation. Policies that address the market failure that underlies the excessive rate of deforestation are feasible, such as subsidies to land use in forestry. I have a study with an Indonesian colleague that shows that carbon emissions in the Indonesian context can be reduced through subsidies for retention of land in forestry at a cost far, far less than \$25 a ton using carbon emissions. These are very efficient policies because they are directly focused on the market failure, which is the heart of our problems here.

**Satoshi Ishihara**, World Bank: I am glad to hear that it is not so much about roads but productivity increase that matters for agricultural development and poverty reduction. I have done some studies some time ago in Africa that assess the contribution of transport costs to prices of agricultural commodities; it turned out to be typically less than 20%. The contribution of road improvement to reduction in prices and increase in competitiveness is much smaller. My conclusion is the same: it comes down to productivity increase and diversification of crops, specializing on some that have a comparative advantage. Another point is about land: there is much discussion about landscape and land use and not so much about land tenure and access to

natural resources. How one uses land depends a lot on land tenure and laws about investments, regulations about economic land, etc. It will be good for future discussions if you can address land tenure systems and regulations about economic investments and forest, mining, and agriculture; these will have a lot of implications on carbon emissions and forest management.

**Peter Rogers:** There was one specific question addressed to me. On the issue of social cost of carbon, it is very contentious how you arrive at these numbers. We just heard two numbers, \$25 and \$800 per ton; they are not even close, not even in the same ballpark. We have some serious reconciliation to do on these things. I am a great believer in the alternative cost method and I would come out on the lower end of that discussion rather than on the higher end. The higher end numbers come from assigning values to ecosystem services, which are largely hypothetical. Ecosystem economics has some very dodgy assumptions built into it and that is where those high numbers come from. When we talked about benefit-costs in our group, we were not referring to market prices but about social benefit-cost analysis. For those of you who are too young to remember, the United Nations Industrial Development Organization (UNIDO) put out a document in 1971 on social benefit-cost analysis, which is by far the best document that I have seen on that to date. We need to make sure we get the right ranges. I think we are not talking of cost-benefit analysis based on market prices but about social benefit-cost analysis. We are not going to resolve the issue between \$800 and \$25; I would argue very strongly for the alternative cost method, which is outlined in the 1971 UNIDO report. Thank you.

**Mark Rosegrant:** There are some very good points raised here about the Lao PDR's land scarcity and the need to improve agricultural productivity, I fully agree with that and also the point raised about comparing the value of developing rural infrastructure, particularly roads, with increases in agricultural productivity. I fully agree with Peter Warr's point about market failure. Getting social and environmental markets to be valued and recognized is the key to sustainable development.

**Anthony Jude:** On the question of cost-benefit analysis raised by Prof Nay Htun, I think we will need to look into it as to how it was done. For the SEA, this could be done in a later session. On the market failures, we have to consider the environmental nexus, the technologies being used, and the lack of policies within the subregion to push certain technologies. Hopefully, in the later session, we can come

up some recommendations on policy. On the Lao PDR and sharing of hydropower energy, I think this will have to be looked at from a basin perspective, and how we can minimize the impacts of hydropower from the tributaries and share the resources. We are not saying that the Lao PDR should not develop hydropower, but to look at how to minimize the impacts. Of course, the power generated will be sold to neighboring countries for revenue and the revenue sharing could also be looked at as in the case of Nam Theun 2 and Nam Ngum 3; how revenues from such projects are set aside for the social and environmental sectors. This is something that can be explored further. On renewable energy in the GMS, there are options but I think these are limited; if we exclude hydropower, the GMS has biomass and solar as renewable energy opportunities; there is not too much wind potential in the subregion. Biomass-based generation using agriculture waste is being done in countries like Thailand through policies for small power plants.

**Peter Rogers:** Just one comment on land tenure issues. Certainly in the Lao PDR and Cambodia, the issue of large concessions to foreign corporations or foreign state-owned companies is a major issue and environmentalists often call it land grabbing. This depends on whether it is a concession that works or it is land grabbing; it also depends very much on the institutional framework within the government and degree of transparency, etc. To achieve the sort of investments that Mark Rosegrant was talking about in precision agriculture, you need to get foreign direct investment and the private sector has that ability. But the private sector is frightened away by the general attitude that concessions are bad and evil. Recently, I saw a 10,000 hectare concession in the Lao PDR run by a Thai sugar company; that was a wonderful experience, with a high tech agriculture that has created 7,000 jobs, exporting sugar from the Lao PDR to the European Union; also other positive aspects and the benefits of transfer of technology. That is an example of land use, a land tenure concession, carefully overseen by both the Thai and the Laotian governments.

**Hasan Moinuddin:** The key question for breakout groups in the next session is: Looking to the next decade, what are the responses and recommendations to challenges the groups identified in earlier sessions. The focus will be: (i) What are the key policy responses needed and by whom? (ii) What are the key data, information, and knowledge responses? and (iii) What are the key institutional responses, both at sector and regional levels? I now take this opportunity to thank all three facilitators, who have done an excellent job of conducting constructive and highly participatory group discussions and I think they all deserve applause.

