

A photograph of a man in a white shirt smiling broadly, standing in a rice field. He is surrounded by tall, golden-brown rice stalks. The background shows a clear blue sky and a distant horizon.

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FOOD SECURITY AND SUSTAINABLE AGRICULTURE IN VIETNAM

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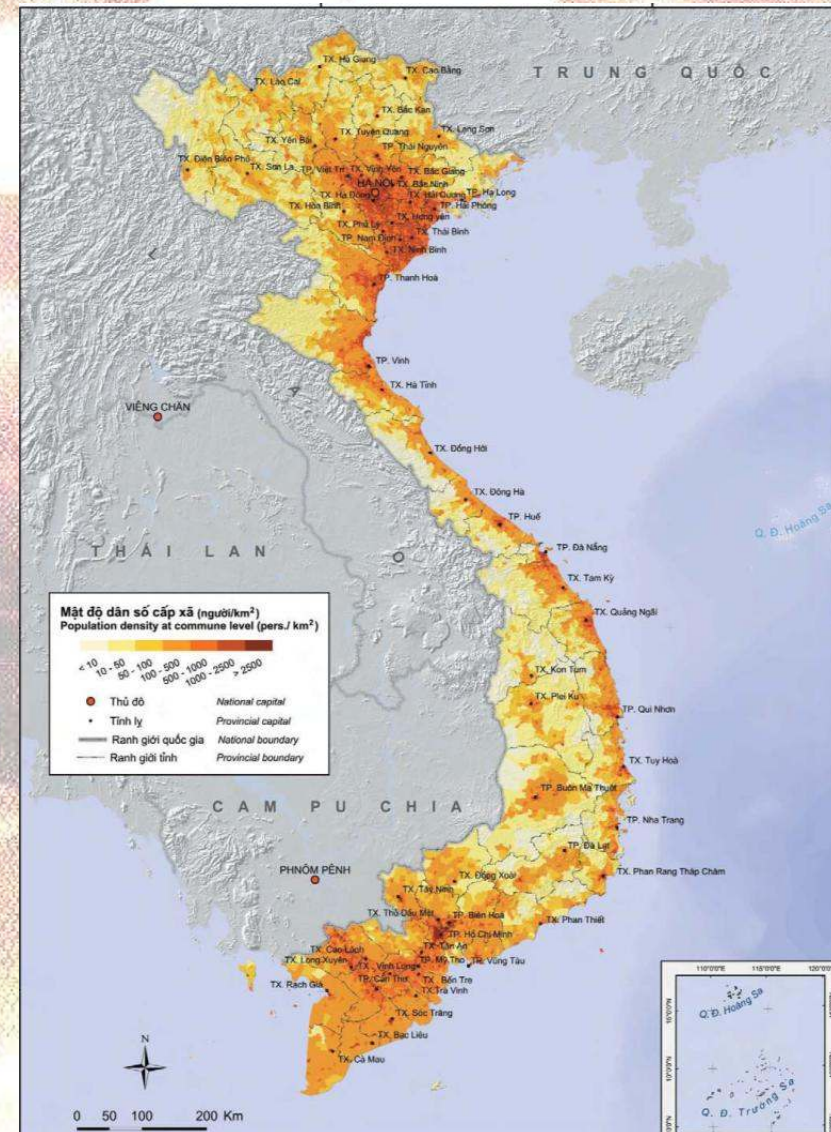
Situation

Challenge

Policy

I. INTRODUCTION

• Between the 2002-04 base period and "The 2015 World Food Summit target date" for reducing the number of the world's undernourished people by half-results indicate that need a 10-percent increase in the distribution gap (the amount of food needed to raise consumption levels to nutritional requirements) and a 16-percent should jump in the number of hungry people.



I. INTRODUCTION (Cont.)

In the world

- In 2002-04, the number of hungry people in the world were 639 millions, slightly decline (7 percent) compared to period 1992-94 that about 688 millions.
- In 2005, 777 millions people were food insecure in 70 lower income countries in the world.

Vietnam

- Vietnam lies in the region of monsoon, tropical climate with a high temperature, average between $(21-27)^{\circ}\text{C}$, rainfall volume of nearly 2,000mm annually and not evenly distributed among the months of the year.
- Versatile and various climates of the regions create a variety of vegetation and domestic animals. But bad thing of climate is drought in the dry-season, floods and storms in the rainy season.

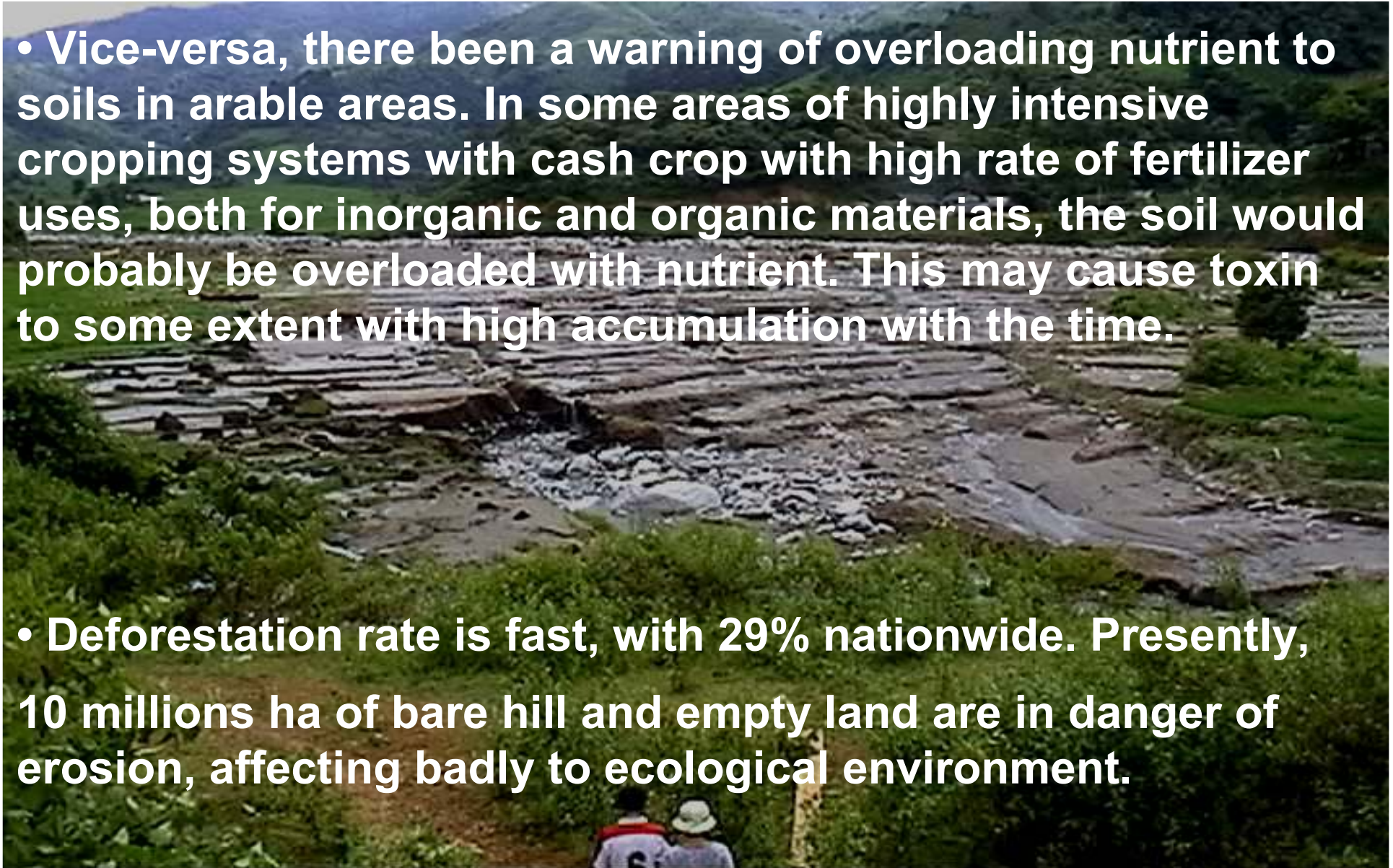
I. INTRODUCTION (Cont.)

- The policy reforms created the right economic incentives for farmers to adopt yield-increasing technologies. Rice production grew at more than 5% per annum during the early 1990s and Vietnam rapidly achieved the status of a major exporting country.
- About 11.5 millions ha of bald hills and empty land, need measures of investment and improvement to bring high effect to socio-economy and ecological environment.
- More than 75% of Vietnamese labor-force engaged in agriculture, forestry and fisheries. Annually average birth-rate of 2.2% nationwide is still high.
- Average GDP in 2005 is only 643 USD per capita. Agricultural production mainly manual with small scale and low productivity. The yields of crops and animals were only to 70% compared with other countries in the region.

I. INTRODUCTION (Cont.)

- Vice-versa, there been a warning of overloading nutrient to soils in arable areas. In some areas of highly intensive cropping systems with cash crop with high rate of fertilizer uses, both for inorganic and organic materials, the soil would probably be overloaded with nutrient. This may cause toxin to some extent with high accumulation with the time.

- Deforestation rate is fast, with 29% nationwide. Presently, 10 millions ha of bare hill and empty land are in danger of erosion, affecting badly to ecological environment.



II. REQUIERMENT OF FOOD AND DAILY NUTRITION IN VIETNAM

“Food security is ensured when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life...”

- The population of Vietnam recently is about 85 millions, should reached 100 millions in 2020, and about 120 to 130 millions after 2030.
- Food demand and food price also rise relatively while the increasing speed of yields and cultivating area will decrease significantly, increasing cost of inputs to agricultural production, impact of natural disasters (typhoons, floods and insects ...).

II. REQUIERMENT OF FOOD AND DAILY NUTRITION IN VIETNAM (Cont.)

Vietnamese National Institute for Nutrition (VNIN-2007) Recommended:

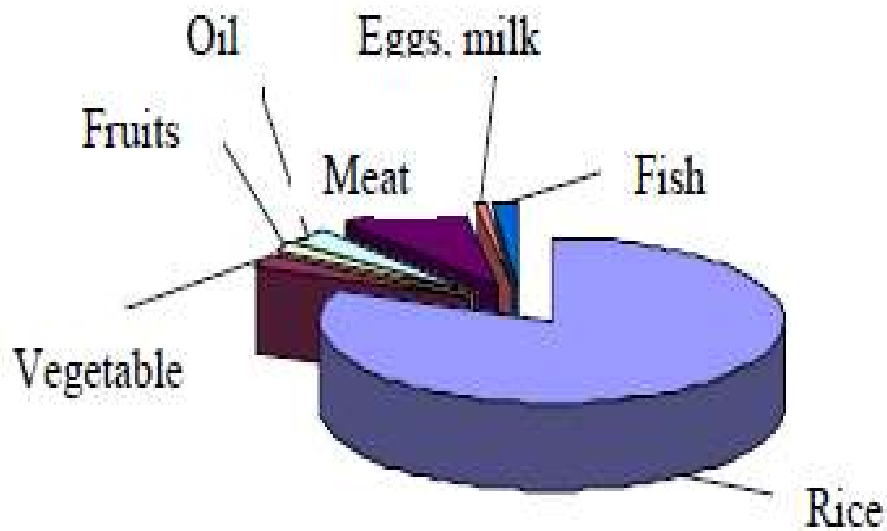
- Nutrition patterns for population is related with gender, ages, type of works.
- The daily meal nominated for person age 31-60: women is 2.2 kcal/day and man-2.6 kcal/day, so Average is 2.4 kcal/day. In 2003 Food energy in daily meal for person was 2.7 kcal/day, in which: the rice covers nearly 2.0 kcal/day. In generally the daily energy is satisfied.

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Daily Meal	Actual , g	Supplied energy, cal	Recom mended by MPH, %
Rice	376	1590 (76.8%)	61 (70%)
Cassava, potato	12	-	-
Vegetable	180	54	300 g
Fruits	72	37	-
Oil	10	88	20 g
Meat	68	246	50 g
Eggs, milk	14	20	-
Fish	52	35	83 g
Total	765	2070	-

II. REQUIERMENT OF FOOD AND DAILY NUTRITION (Cont.)



Proportion of daily meal nutrition in Vietnam




- **Because of non-uniformity between deferent area, in 2003, group food insecurity in Vietnam is about 11%, group malnutrition is more than 14%.**

II. REQUIERMENT OF FOOD AND DAILY NUTRITION IN VIETNAM (Cont.)



- Period 1998-2004, in Vietnam the daily meal portion starts to be balanced, decreasing averaged rice ratio consumption to 150 kg/person. year, downed 12% compared to 10 years ago. In 2001, it was 193 for rural area, and 127-for the cities. The deference is decreased from 66 in 2002 to 39 kg in 2004.



- By VNIN: Consumed rice/person. month is slowdown from 11.9 in 2002 to only 11.3 in 2004. In this period, poor household in the country decrease 2% (near 3 millions). This group population is hardly access to food....



III. SITUATION OF FOOD SECURITY AND SUSTAINABLE AGRICULTURE

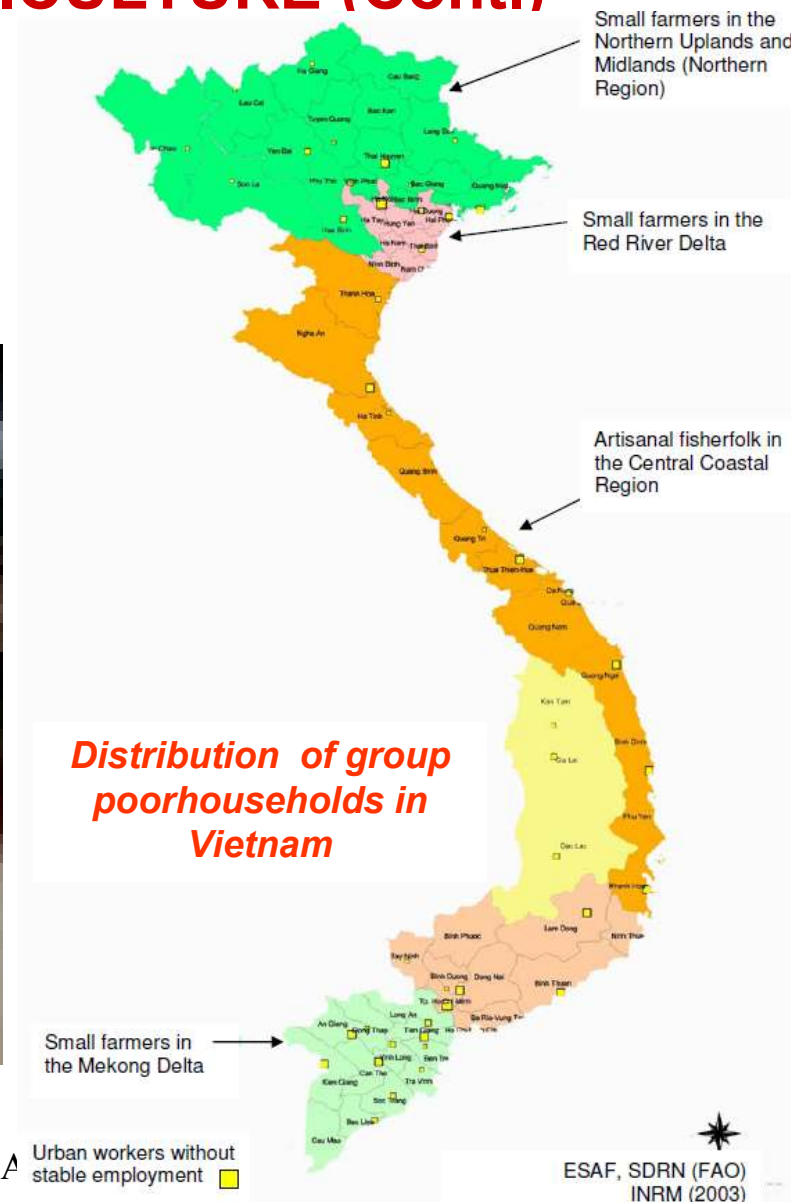
- In the 2007, rice is still the main crop in Vietnam, cover more than 70 % total equivalent harvested and 90% cereal, (corn: 4 x106 ton/year, cassava - 8.000 ton/year, sweet potato-1.500 ton/year using mainly for breeding etc.).
- Recently, the general rising trend of rice productivity is slowdown until 1.4% /year at 2007, total yield reached 5 tone/ha.
- Because of natural calamity, diseases frequently and world oil rising price. The rice productivity in Vietnam is 17% higher than Asian country but lower (13-15)% than China, Korea and Japan.



III. SITUATION OF FOOD SECURITY AND SUSTAINABLE AGRICULTURE (Cont.)

- By new criteria, a poor household in Vietnam is 23% at 2002 and 21% at 2005.

• At the end of 2006-it is 18% (5% less compare 2002), in which: 7% in SOUTH, 20% in Mekong delta, 21% in Red river delta and in Artisan fisher folk the Central Coastal Region, 32% in NORTH, 41% in Central Plato, and 54% in poorer WEST-NORTH areas.



III. SITUATION OF FOOD SECURITY AND SUSTAINABLE AGRICULTURE (Cont.)

- In the 2006 poor households are concentrated in rural areas and among ethnic minorities, as found by VHLSS (Vietnam Household Living Standards Survey) while excludes unregistered migrants, who tend to be poorer than other urban residents and have limited access to government sponsored social assistance schemes.
- It is thus highly likely that the rates of urban poverty are under-reported in the VHLSS. In urban and peri-urban areas, poor households and migrants are particularly vulnerable to higher food prices.
- In 2007, total poor households lessen to 15.7%, less 3% compare with 2006. This is the step in National program for diminishing poverty-stricken to reduce to (10-11) % at the end of the period 2006 – 2010 (MARD).

III. SITUATION OF FOOD SECURITY AND SUSTAINABLE AGRICULTURE (Cont.)

- In addition to the vulnerable position of those already below the poverty line to which the below table refers, reduced purchasing power represents a substantial risk of households that had risen above the poverty line falling back below it. In this way, the sustainability of the success of Vietnam's poverty reduction efforts over the past 20 years could quickly be undermined.

Sector	Poverty rate	Food poverty rate	Poverty gap
National	16.0	6.7	3.8
Urban	3.9	1.2	0.7
Rural	20.4	8.7	4.9
Kin and Chinese	10.3	3.2	2.0
Ethnic minorities	52.3	29.2	15.4

III. SITUATION OF FOOD SECURITY AND SUSTAINABLE AGRICULTURE (Cont.)

In the Table below shows facts and figure above GDP, agriculture products and poverty in Greater Mekong Subregion (GMS) countries

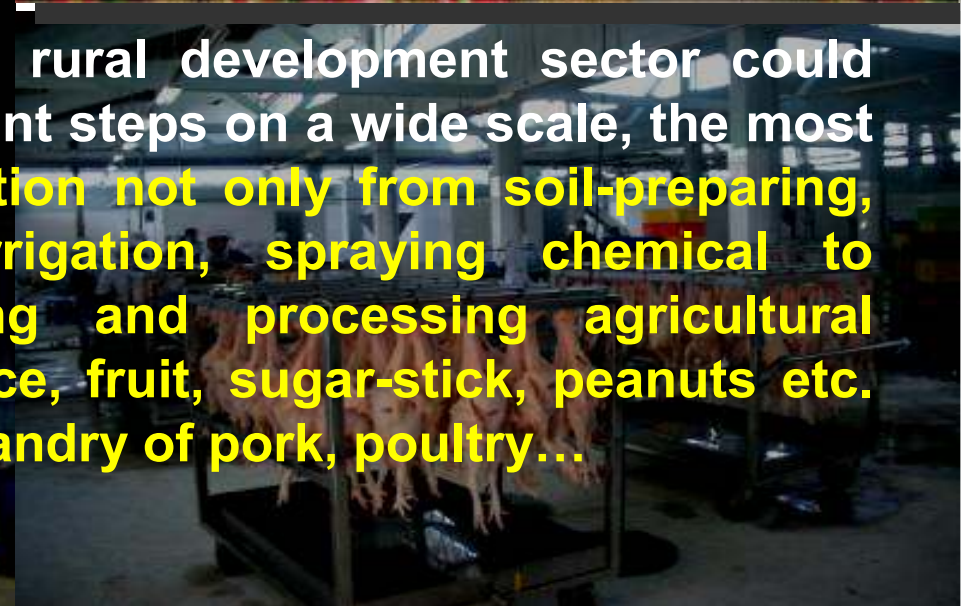
Facts and Figures	Cambodia	Lao PDR	Thailand	Vietnam
GDP (2006) (US \$ billions) ^a	7.2	3.4	206.2	60.9
GDP per capita (2005) (US\$ PPP) ^b	2,727	2,039	8,677	3,071
Percent GDP from Agriculture (2005) (%) ^c	34.2	44.8	9.9	20.9
Poverty (population below US\$1 PPP per day, 2003) (%) ^d	34	26	2	2
Proportion of undernourished in total population (2001-2003) (%) ^d	33	21	21	17
Production of Cereals (2004) (1000 tons) ^e	4,426.9	2,732.5	28,276.8	39,341.4
2 Production of Cereals Share in the world (2004) (%) ^e	0.19	0.12	1.25	1.73
Producer Price: Rice, paddy (2006) (Local currency/tons) ^e	601,000	1,296,168	6,607	na



IV. AGRICULTURAL ENGINEERING AND TECHNOLOGY FOR INCREASING CROP

- Despite many challenges of natural calamities such as droughts, storms and flooding; widespread of disease; and unfavorable market changes, especially those of the international market, **Vietnam tried to maintain their focus on agriculture and rural development, by issuing a lot of new policies to create more motivations mobilizing internal resources, expanding the international cooperation relations, etc.**

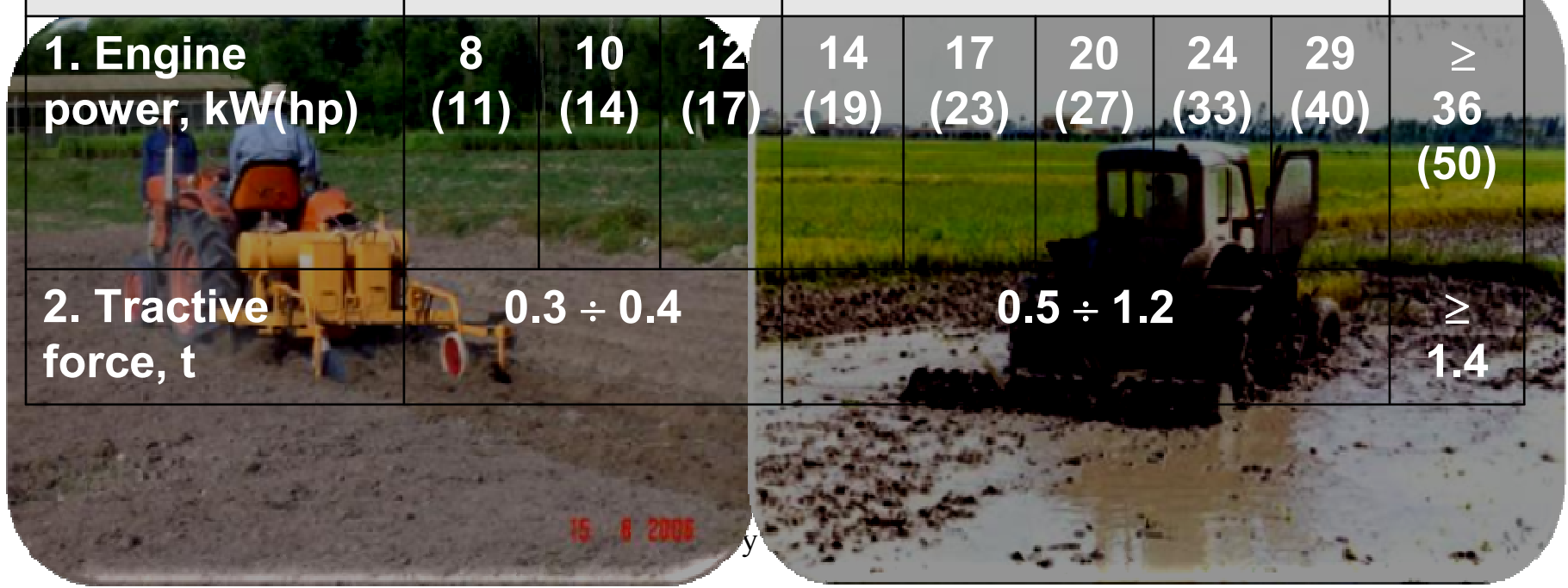
- Therefore, the agricultural and rural development sector could manage its remarkable development steps on a wide scale, the most notable of which are: **Mechanization not only from soil-preparing, sowing, weeding, fertilizing, irrigation, spraying chemical to harvesting and post harvesting and processing agricultural products for all types such as rice, fruit, sugar-stick, peanuts etc. but mechanization in animal husbandry of pork, poultry...**



IV. AGRICULTURAL ENGINEERING AND TECHNOLOGY FOR INCREASING CROP (Cont.)

• Up to now for main rice production area, highest level of mechanization in thrashing: near 100%, soil-preparing is more than 80%, irrigation attain-75%, sowing: 10% v.v. Tractor range from 11 hp to 40 are commom used in practice as shown in the Table below

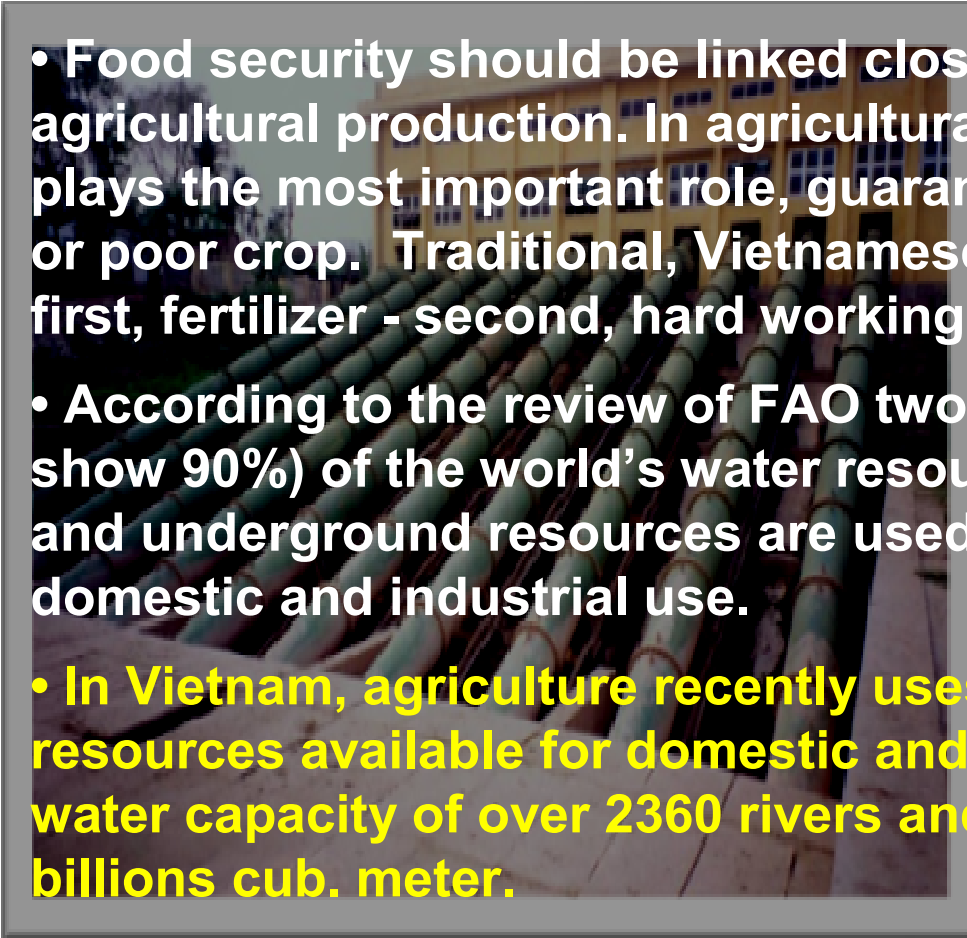
Range of power	I			II					III
1. Engine power, kW(hp)	8 (11)	10 (14)	12 (17)	14 (19)	17 (23)	20 (27)	24 (33)	29 (40)	≥ 36 (50)
2. Tractive force, t	0.3 ÷ 0.4			0.5 ÷ 1.2					≥ 1.4



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IV. AGRICULTURAL ENGINEERING AND TECHNOLOGY FOR INCREASING CROP (Cont.)

- The rural socio-economic infrastructure has been improved and developed, especially those for irrigation/drainage, contributing to promoting production and improving the population's living conditions.



- Food security should be linked closely with sustainable agricultural production. In agricultural production, water always plays the most important role, guaranteeing whether there is a good or poor crop. Traditional, Vietnamese farmers say: "Water is the first, fertilizer - second, hard working - third and variety - forth".

- According to the review of FAO two thirds (but now many studies show 90%) of the world's water resources coming from rivers, lakes and underground resources are used for irrigation, the rest for domestic and industrial use.

- In Vietnam, agriculture recently uses over 90% of the total water resources available for domestic and industry, having a total surface water capacity of over 2360 rivers and lakes estimated about 850 billions cub. meter.



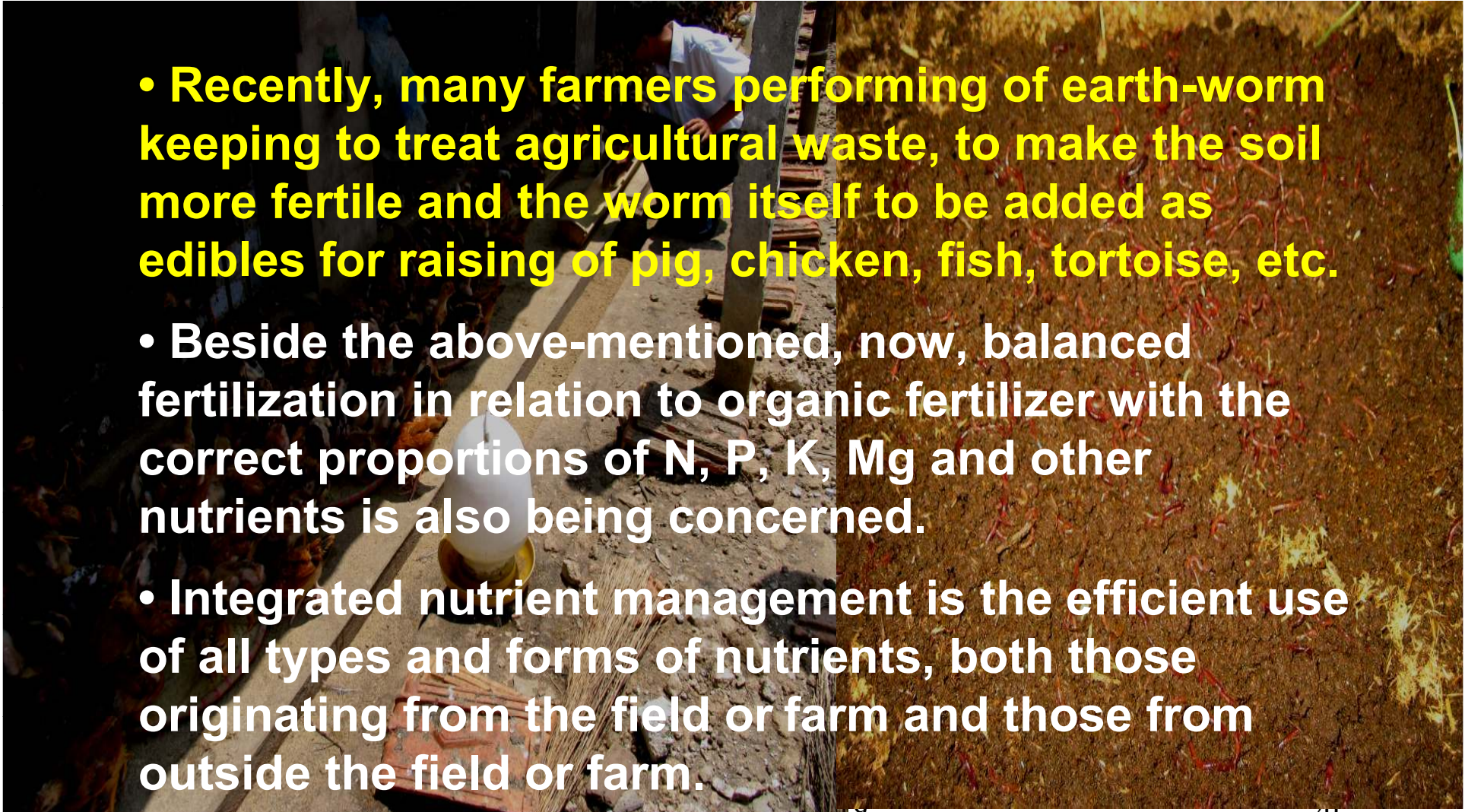
IV. AGRICULTURAL ENGINEERING AND TECHNOLOGY FOR INCREASING CROP (Cont.)

Water supply and irrigation in Vietnam have basically met the temporary development, including in the agricultural and rural sectors:

- Over long period of time, the country has invested near 250 facilities, creating more 94,000 irrigated hectares, 150,000 drained hectares, preventing salinity intrusion for more 226,000 hectares, providing bulk water for more than 200,000 hectares, and improving quality of water supply for 1 million hectares.
- The total irrigation and drainage capacities by 2005 have reached 8 and 1.7 million ha of cultivated land, respectively.
- Building and strengthen dyke systems in 19 provinces in the North, Northern Central Coast, and support a part of similar efforts in the central coastal provinces.
- The amount of excavation and earth fill works were more than 10 million cub. meter, and 1 million cub. meter of rock were used to construct bank protection works (MARD).

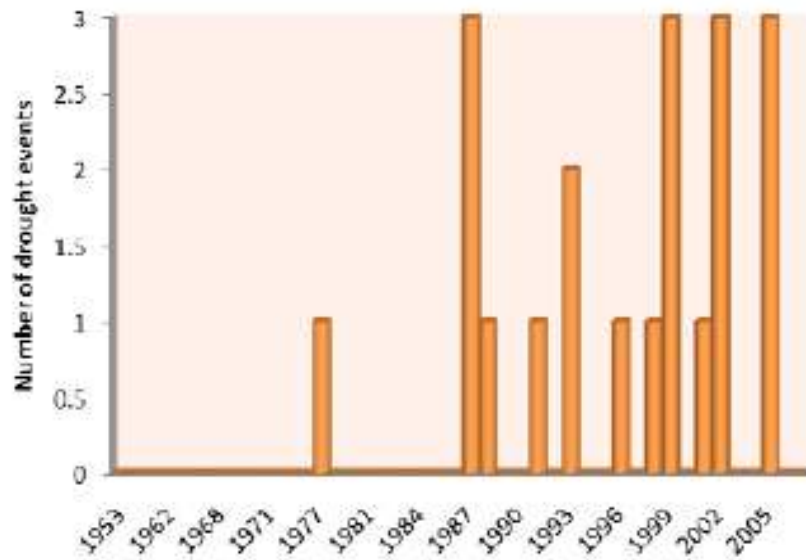
IV. AGRICULTURAL ENGINEERING AND TECHNOLOGY FOR INCREASING CROP (Cont.)

- Recently, many farmers performing of earth-worm keeping to treat agricultural waste, to make the soil more fertile and the worm itself to be added as edibles for raising of pig, chicken, fish, tortoise, etc.
- Beside the above-mentioned, now, balanced fertilization in relation to organic fertilizer with the correct proportions of N, P, K, Mg and other nutrients is also being concerned.
- Integrated nutrient management is the efficient use of all types and forms of nutrients, both those originating from the field or farm and those from outside the field or farm.

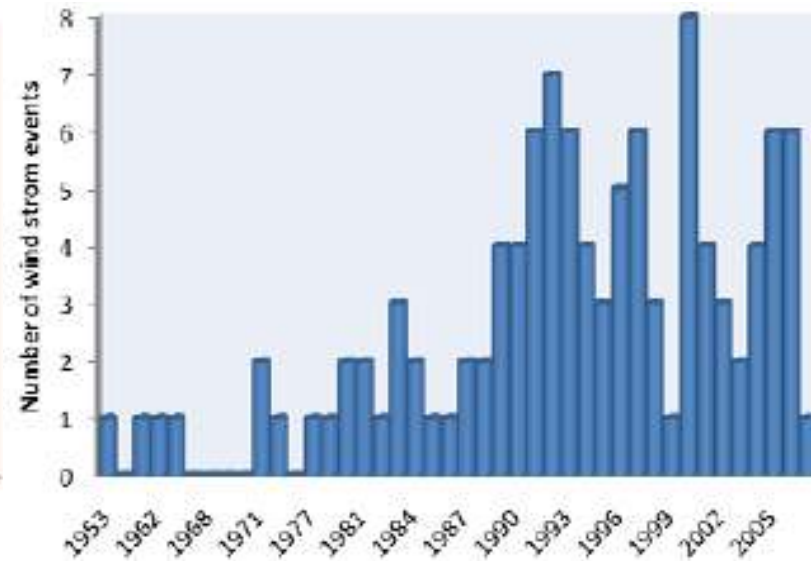


V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES

Today, the research and development of agricultural technology are facing serious challenges posed by climate change, natural disasters, sharp increase of food price in a short run, and food security and sustainability in a long run affected by increased cost of inputs to agricultural production and energy price (The World Bank 2007).



a)



b)

Frequency of drought (a), and wind storm events in GMS 2 (b)

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Concerns about the impacts of climate change in agriculture and food security has intensified due to recent extreme weather events as a possible result of global warming. For instance, with little rain falling in late 2004 and early 2005, Southeast Asia faced one of the worst droughts in 50 years severely impacting crop yields and availability of drinking water .
- According to news reports, the drought cost farmers in Thailand up to US \$193.2 million after 809,000 hectares of crops were lost. Viet Nam lost US \$60 million in crops, and up to 1.3 million people did not have access to clean water. Other countries in the Mekong delta regions were similarly affected, with food shortages in Cambodia and a lack of drinkable water in Hainan, China.
- Various international organizations attributed these extreme weather events to global warming. In addition to rising sea level and severe tropical storms resulting salt water intrusion of agricultural land, the extreme weather events caused by global warming such as drought are already being experienced and are likely to occur more frequently in future affecting agriculture production and food security (Figure below).

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

Anticipated Impacts of Climate Change on Agriculture and Food Security

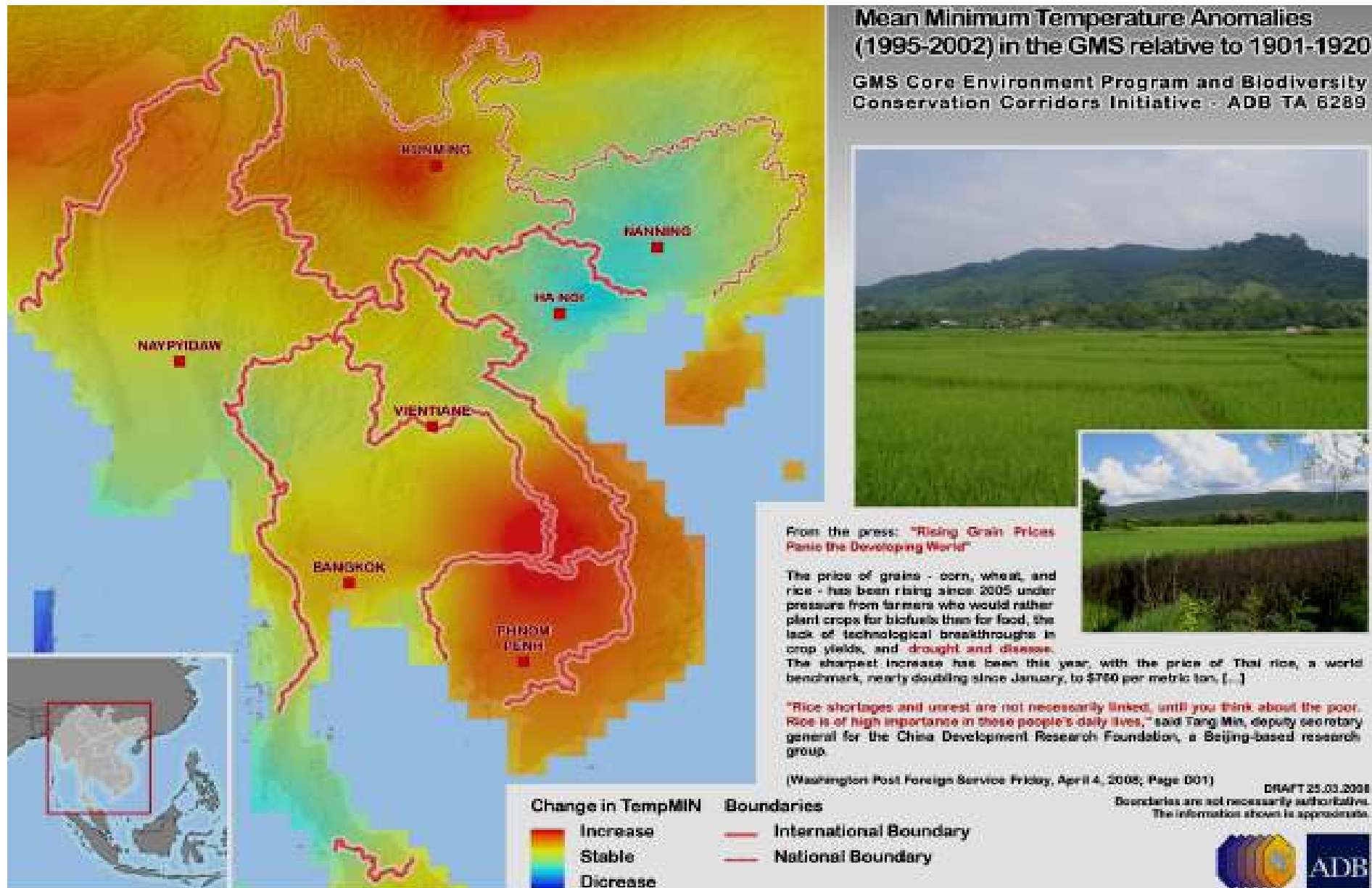
The gradual changes in climatic conditions are likely to be disruptive to food security due to:

- Changes in the suitability of land for different types of crops and pasture due to change in distribution of agro-ecological zones.
- Loss of arable land due to increased aridity and associated salinity, groundwater depletion and the rise in sea level.
- Increased risks of more frequent, more widespread, and more serious flooding in low lying areas.
- Loss of biodiversity and ecosystem functioning of natural habitats and change in health and productivity of forests, wetlands etc.
- Changes in the distribution of good quality water for crop, livestock and inland fish production.
- Threats from increasing incidence of pests and diseases, due to change in distribution of disease vectors.

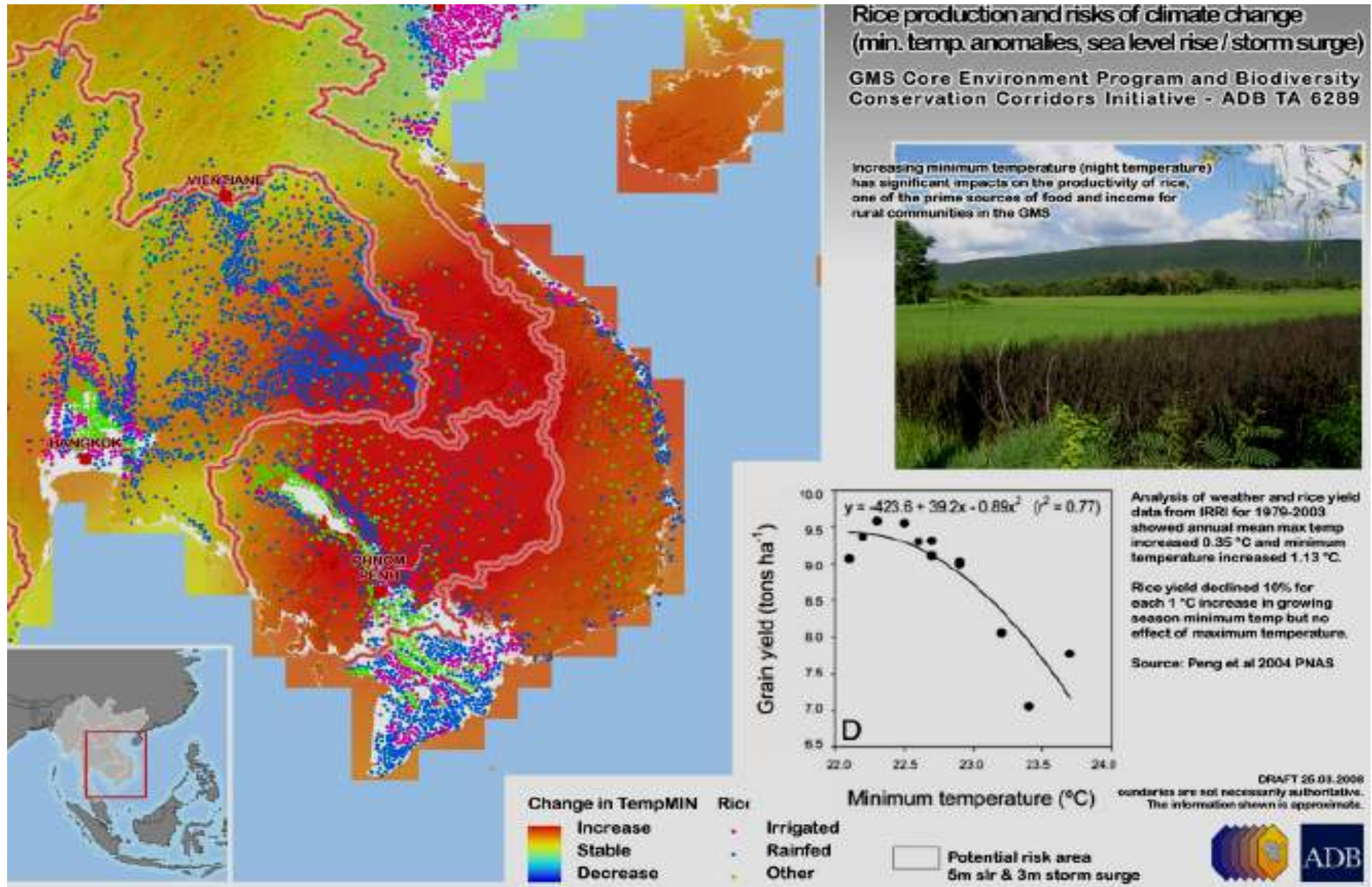
V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Because of change in weather pattern, crops will tend to fail or become unprofitable where conditions were grown successfully may develop in other areas that have become marginal for other crops.
- Temperate crops, such as potatoes and vegetables, may be able to be cultivated at higher elevations, while crops currently confined to the lowlands may be able to be grown on slightly higher land.
- Over the past 100 years, temperature data of the Greater Mekong Subregion (GMS) countries shows that areas of increasing intensity e.g. in the Emerald Triangle between Cambodia, Lao PDR and Thailand and relative increase in most of Cambodia, Northeast of Thailand, southern Lao PDR, and most of central and southern Vietnam as see figures below.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)



V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)



V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Scientists carrying out experiments at International Rice Research Institute (IRRI) record a decline in rice yields impacted by an increase in minimum temperatures (at night).
- The results show the rice growing areas in the GMS that may be affected. Analysis of weather and rice yield data from IRRI for 1979-2003 showed annual mean maximum temperature increased 0.35 Celsius degrees and minimum temperature increased 1.13 degrees, rice yield declined 10% for each 1 degree increases in growing season minimum temperature.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Climate scenarios of the study conducted by Southeast Asia START Regional Center (SEA START) in Southeast Asia indicate that the region in general is expected to be warmer and wetter when affected by elevated atmospheric CO₂ up to 720 ppm.
- The hot period of the year will extend longer and the cool period will be significantly shorter while the length of rainy season would remain the same, but with higher rainfall intensity. These changes in climate pattern will result in higher discharge of most of the Mekong River tributaries.
- The study suggested that the climate change in the lower Mekong River region may cause shift and change in rainy season pattern that would directly affect the rain-fed rice cultivation, which is the most important agricultural activity that involves large number of population in the region.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

- The result from simulation using crop modeling technique shows that yield of rice productivity in the study site in Thailand will increase by 3-6%; but on the contrary, may reduce by almost 10% in the study site in Lao PDR. The rice production in the Mekong River delta in Vietnam tends to have severe impact from climate change, especially summer-autumn crop production, of which the yield may reduce by over 40%.
- **Studies suggest that the Mekong river delta, one of the region's most important agricultural area will be the most affected due to rising sea level with 1.77 million ha of salinized land, accounting for 45 percent of the land.**
- Another study suggests that the rise in sea level will increase salinity of main tributaries of Mekong as far inland as 10 km that impact most to Vietnam.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Inundation and the resulting loss of land, and saline water intrusion in the Mekong delta will pose serious threats to farmers as well as agricultural exports such as rice (of which Viet Nam is the second largest exporter in the world), and possibly to national food security (see Figure for level rise inundation zone in Mekong delta).
- Land is being diverted to urban/industrial uses and competition for scarce freshwater resources between agriculture and industry and residential uses also has adversely impacted the supply growth.
- An ADB study shows that the water available for agriculture has already declined sharply over the past several decades, particularly in Asia. Especially forecast for water and land use in Vietnam is shown in p.31 & p.32 (MARD).

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

Water scarcity will be increasingly challenging for many of the Asian countries, in particular for Vietnam. In the near future, by 2010, water for agricultural production in Vietnam will still take over 80% of its water. So the sustainable use and management of water is also important for national food security. The following statistics show the water resource as important for agricultural development in Vietnam.

The situation and forecast of land use in Vietnam by 2010

Types of land	Year		
	1995	2000	2010
Country natural land area	33,000,000	33,000,000	33,000,000
 Agricultural land, ha			
Paddy rice	7,348,500	7,790,000	9,409,600
and other cropping, ha	9,500,000	14,300,000	15,900,000
Forestry land of all types, ha	16,151,500	10,110,000	7,690,400
Other land, ha			

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

Low-income countries with limited adaptive capacities to climate variability and change are faced with significant threats to food security.

Sectors using water	Water requirement/year					
	1990		2000		2010	
	x10⁹ m³	%	x10⁹ m³	%	x10⁹ m³	%
Agriculture	46,976	91	60,929	85	74,035	82
Industry and domestic use	4,659	9	10,960	15	15,918	18
Total	51,635	100	71,926	100	89,953	100

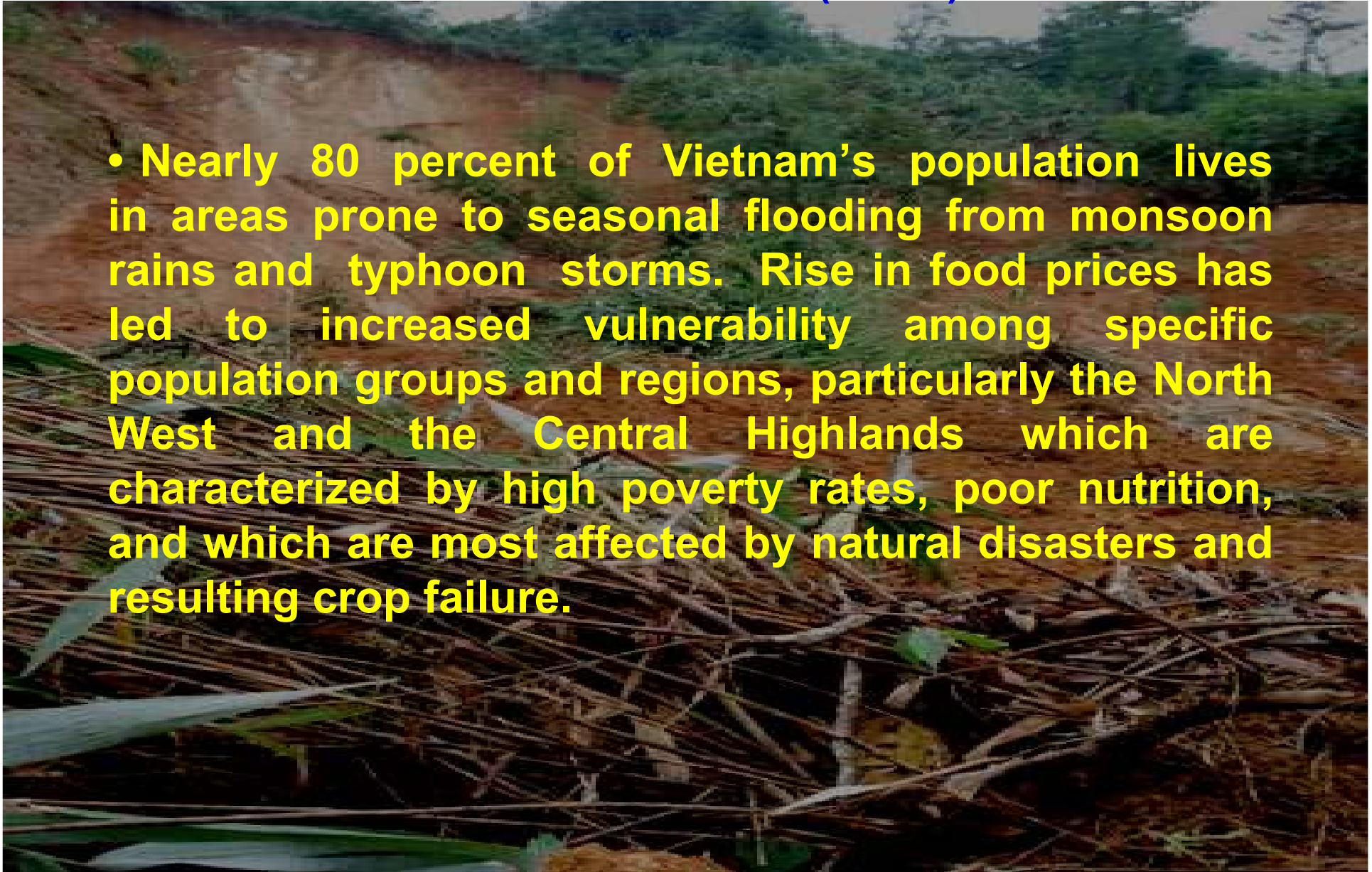
V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

Vulnerability of the poor

- **Climate change is an issue of concern in the GMS for the reason that, it would directly affect agriculture activity and may threaten livelihood of large number of agrarian population in the region.**
- **Agriculture employs about one third of the subregion's population. For rural economies in the GMS the additional stress imposed by climate change could threaten the goal of poverty alleviation.**
- **Much of the subregion's poverty is in rural areas and nearly all the rural poor are rice farmers. Many ethnic minorities living in and around forests and mountainous areas in the GMS are mostly dependent on subsistence agriculture for their livelihoods.**
- **Similarly, poor coastal communities are most vulnerable as they have limited adaptive capacities and are more dependent on climate-sensitive local water and food supplies.**

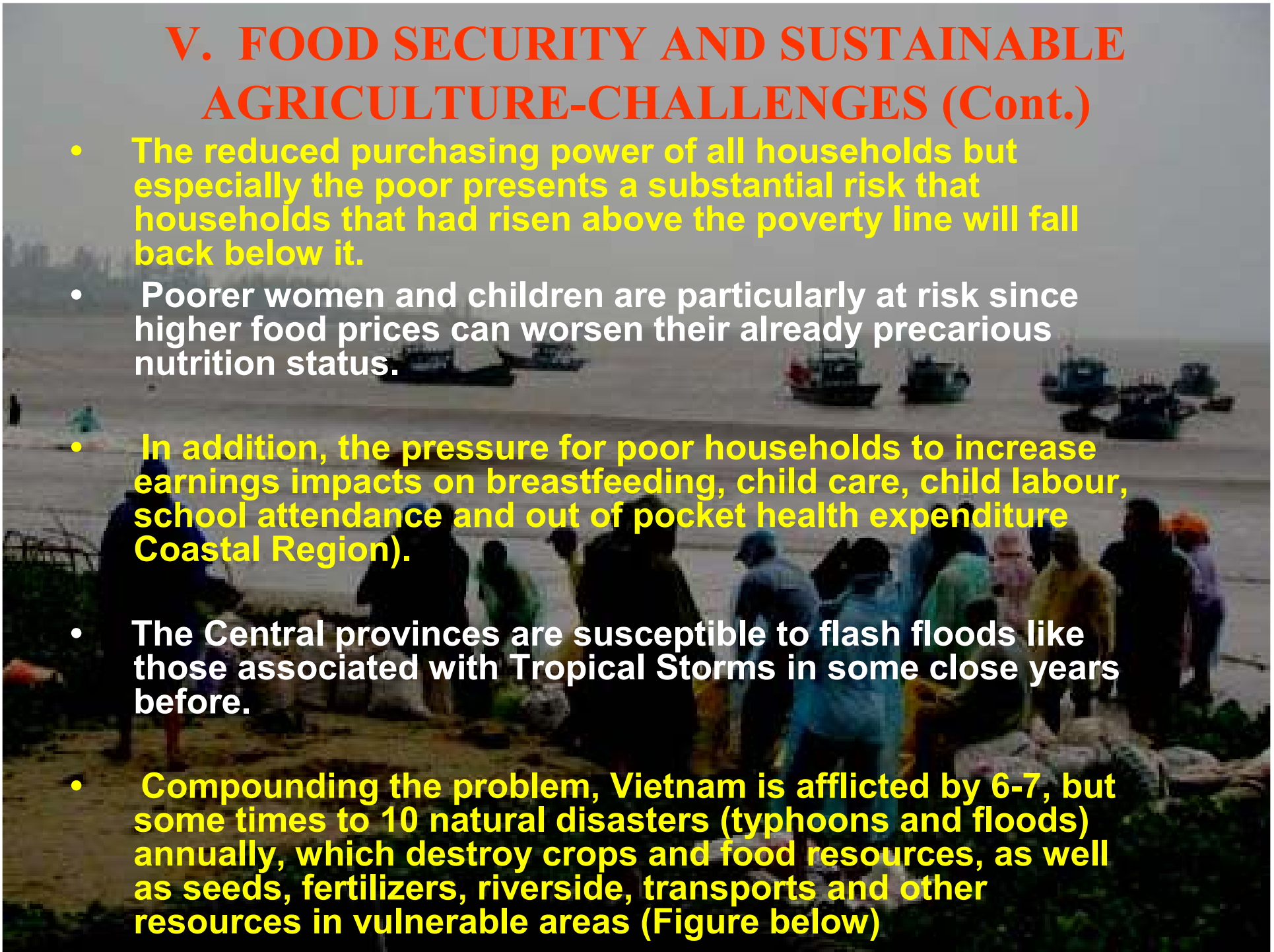
V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

- Nearly 80 percent of Vietnam's population lives in areas prone to seasonal flooding from monsoon rains and typhoon storms. Rise in food prices has led to increased vulnerability among specific population groups and regions, particularly the North West and the Central Highlands which are characterized by high poverty rates, poor nutrition, and which are most affected by natural disasters and resulting crop failure.



V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- The reduced purchasing power of all households but especially the poor presents a substantial risk that households that had risen above the poverty line will fall back below it.
- Poorer women and children are particularly at risk since higher food prices can worsen their already precarious nutrition status.
- In addition, the pressure for poor households to increase earnings impacts on breastfeeding, child care, child labour, school attendance and out of pocket health expenditure (Coastal Region).
- The Central provinces are susceptible to flash floods like those associated with Tropical Storms in some close years before.
- Compounding the problem, Vietnam is afflicted by 6-7, but some times to 10 natural disasters (typhoons and floods) annually, which destroy crops and food resources, as well as seeds, fertilizers, riverside, transports and other resources in vulnerable areas (Figure below)



V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)



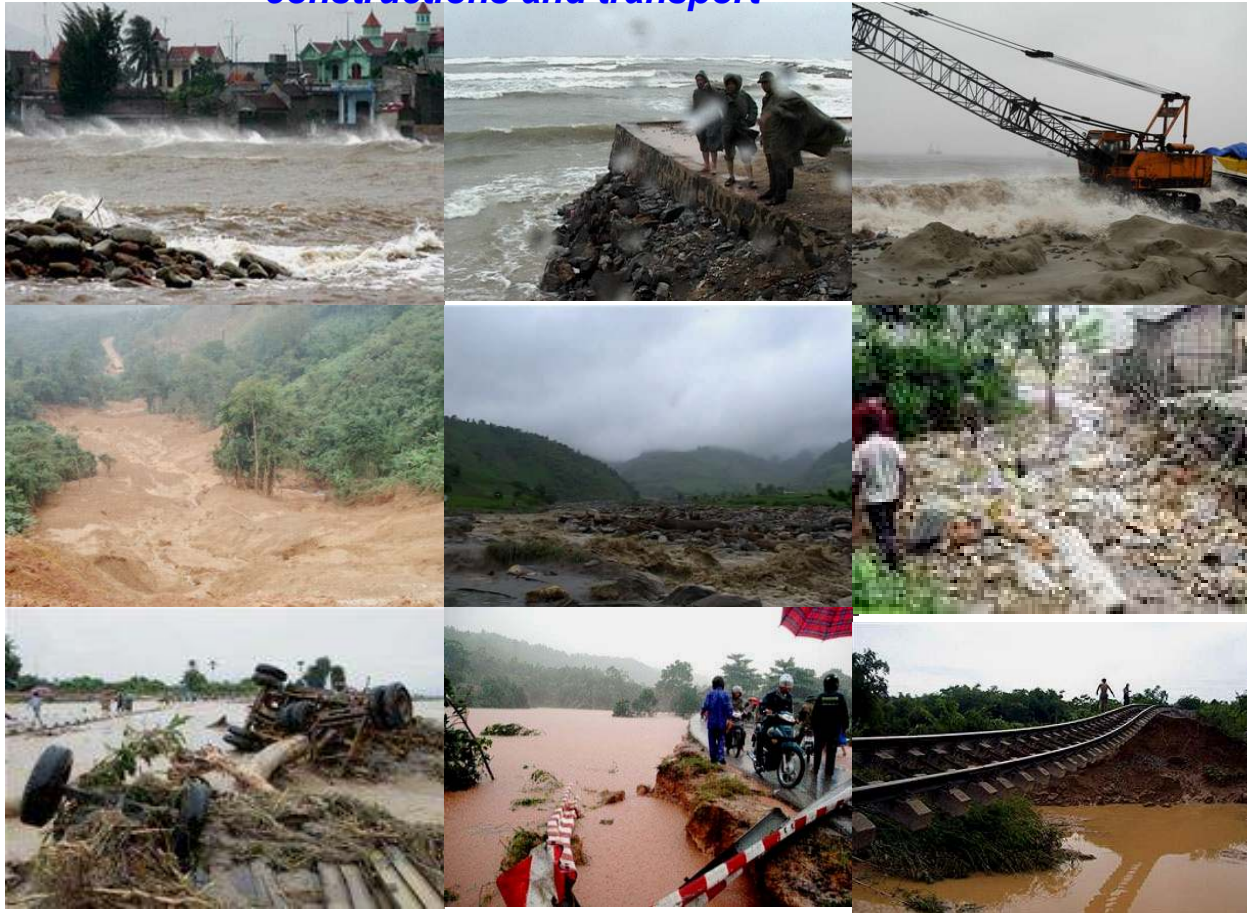
Typhoon and flood destroy crops, seeds and fertilizers, riverside fall in

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Dealing with climate change will be a major challenge for Vietnam in the next decades. Its effects may threaten the impressive economic progress the country has made. The coastal area of Vietnam is one of the most vulnerable areas being affected by climate change. Although accounting for only 12% of territory of Vietnam, it is home to 23% of the population, and would be largely inundated by the sea level rise of 1 metre in the future as an effect of climate change. Vietnam urgently needs expertise and financial support from the international community .
- Floods occur at lightening speed due to the narrowness of the coastal strip (the distance from mountains to the sea can be as short as 70 km), low height above sea level and very steep mountain slopes. Torrential rains can burst riverbanks in five or six hours leaving little time to predict or announce imminent floods to vulnerable communities. The frequent failure of dyke systems (river and sea) increases the area of land subjected to disasters and the number of people affected (Figures below).

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)

*Typhoon and flood destroy dykes system, soil erosion,
constructions and transport*



V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- **Urban and rural households in Vietnam are forced to cope with various natural calamities, which can sometimes be catastrophic. Frequent and recurring floods, typhoons and cyclones threaten the livelihoods of small-scale and subsistence fisher families in Central Vietnam. In the eight provinces from Quang Tri to Khan Hoa, hundreds people were killed and hundred thousand houses evacuated during floods in 2007.**
- **Storms regularly damage houses, boats and fishing equipment, and prevent fisher folk with non-motorized canoes and low capacity engines from going to sea.**
- **The ensuing interruption in earnings leads these households to deplete their assets or taking out a loan. Interviews conducted with people in the group of vulnerable artisanal fisher folk found that families with few assets to begin with are frequently left with nothing. The absence of insurance to cover vessels exacerbates the risk (Figures below).**

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)



Typhoon and flood damage fishing equipments, houses and isolate residential area

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Poor households with few economic alternatives are often dependent on dangerous or unhealthy occupations. Artisanal fishing is a risky activity and long-term insecurity results from accidents involving disability, death or loss of property. **Fisher folk who cannot afford to invest in more powerful engines, safety gear or radio equipment are most at risk given their inability to monitor weather conditions or reach shore quickly when storms arise. They are also at risk of illnesses like acute respiratory infections, rheumatism and traumatic diseases after accidents.** Women in these households, who fish standing for long periods in lagoons and bays throughout the year, are at high risk of gynecological infections.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- Hygiene and health care levels in coastal communities are low, due to inadequate access to safe drinking water, lack of toilets and insufficient access to health services. Beaches that are used as landing sites and to sort and clean the catch also serve as public latrines and the quality of drinking water is poor.
- **Unsanitary living conditions are also a high risk for other vulnerable people. Many poor urban workers with unstable occupations live in overcrowded slums where proper sanitation and water connections are unavailable. Proper sanitation is rare in the deltas. In the Mekong Delta, human wastes are often discharged directly into fish ponds or rivers and canals from which people draw their drinking water during the dry season.**
- Small and marginal farmers in the Red River and Mekong Deltas, and households living in urban slums, are also vulnerable to severe weather conditions and floods. The floods in 2008, the worst in 50 years, damaged more than 200 000 hectares of paddy crop (Figure below)

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)



Typhoon and flood obstruct normal activities, take part to increase market price

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

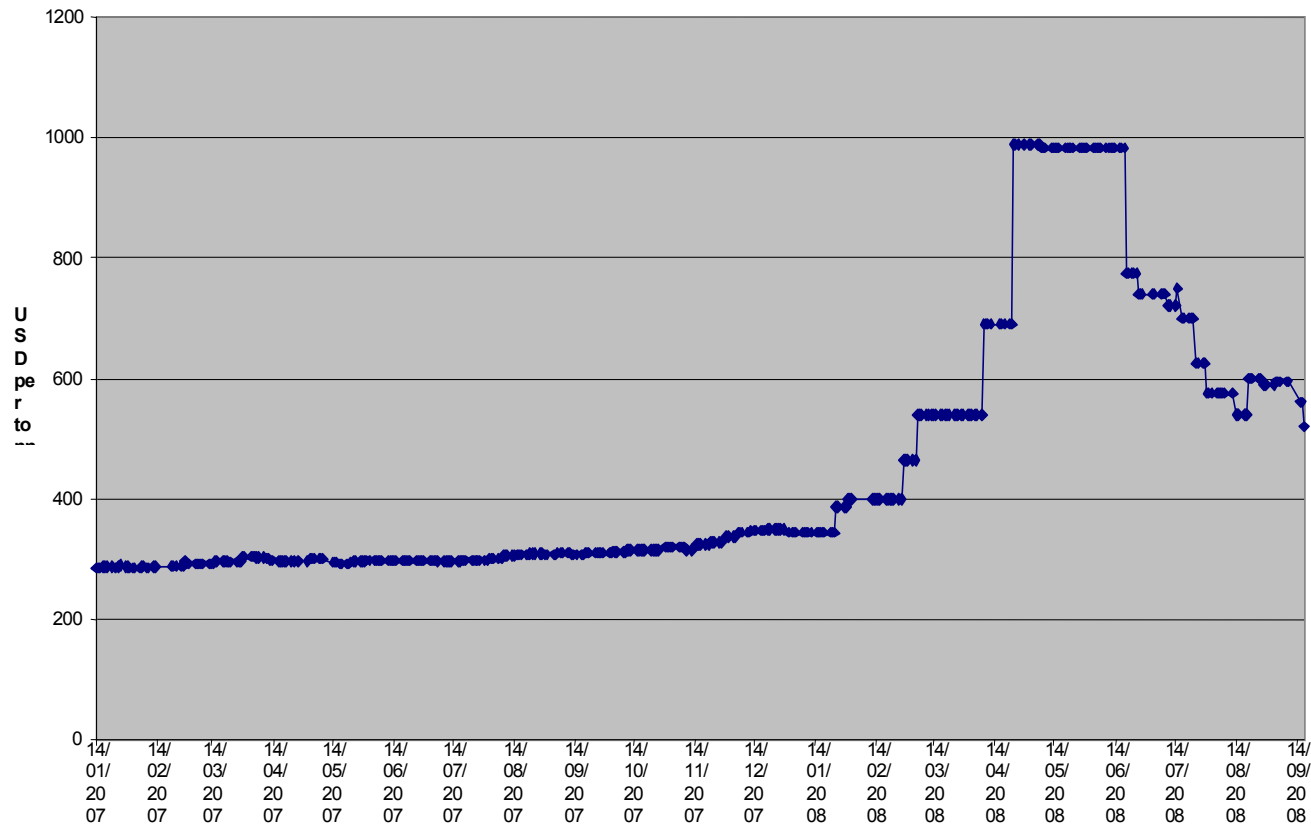
In addition to the cost in human lives and livestock, flooding destroys housing, infrastructure, irrigation systems and equipment. In the Mekong Delta, families who live on the most low-lying land are regularly displaced for three months each year, with no option but to put themselves up in makeshift shelters along roads on embankments or to migrate temporarily to HCMC or more remote upland areas in An Giang and Long An Provinces.

High energy prices and energy intensity of the agricultural sector have made agricultural production more expensive by increasing the cost of critical inputs like fertilizer, fuel, and power. Both irrigation and fertilizers are critical inputs to the production of high-yielding varieties of food grains. The sharply rising energy prices and have fed into agricultural production cost and food grain prices. In 2008, despite large subsidies in Vietnam, domestic energy prices have increased 20 – 50% while fertilizer, irrigation, and transport costs have increased 30 – 50%.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

- In Vietnam, prices peaked in June-July 2008 and then, following good harvests, prices began to stabilize and the export ban was removed in July 2008 (Figure below). Subsequently, there has been a gradual decline in prices, which is partly explained by the inability of exporters to sell the stocks that were speculatively accumulated with the view of future price increases. Warehouses remain full and farmers in rice growing areas are unable to profitably sell their rice produce. This is undermining the financial position of many farm households, especially those that are required to repay loans that were raised for the purchase of inputs.
- Globally, the UN and the World Bank signaled their opposition to the rice export ban at the time. Measures to limit international sales by the few major rice exporting countries (including Viet Nam) caused strong disruptions to the normal pattern of trade. Apart from exacerbating the tendency for prices to rise, they also resulted in a greater incidence of contract defaults by exporters and fostered an intensification of government-to-government rice deals, presumably settled at lower prices than those offered by private traders. All this led to increased market volatility.

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE- CHALLENGES (Cont.)



**Rice Price
Fluctuations:
2007-2008**

V. FOOD SECURITY AND SUSTAINABLE AGRICULTURE-CHALLENGES (Cont.)

Advanced technology for bio-fuel production

- The production of fuel from renewable biological resources will contribute to reduced environmental problems and sustainable energy. But it is clear that this cannot be achieved where food crops are diverted and agricultural input costs are greater than the net energy output. Production of ethanol from corn and other cereals is responsible for half of the increased demand for these crops and for the consequent increase in food prices. While bioenergy, ethanol and *Jatropha* are fashionable subjects in the current debate, it is unwise for Vietnam to participate in the light of food security and climate change issues already discussed. There is no case for a country like Vietnam to divert its scarce resources towards energy production from agricultural land.
- There is however limited scope for the use of crop and animal by-products for fuel production, and certainly for solar, wind and wave power. More realistic is hydro-electric and nuclear power, which has infinitely more potential to replace oil and other fossil fuels. And there is certainly scope for reduction in energy use and for greater efficiency in all aspects of human activity, including agriculture.

VI. CONCLUSION

Situation

- 1- Viet Nam is a rapidly developing economy with remarkable progress in food production. However, in the past year, increases in global commodity prices including food products have posed a new set of challenges to Vietnam's ability to maintain a path of sustainable and socially equitable growth. Given that Viet Nam is a net exporter of food, particularly rice, it might be expected that the country would benefit from higher international prices. However, this does not apply to the entire population as less than half of Vietnamese households are net sellers of food, and many net buyers of food have not seen their incomes increase in the same proportion as food prices. The impact of higher food prices throughout the country is complex as individual households differ in their production and consumption patterns, as well as in their sources of income. Distinct regional/local differences and market volatility are evident in the current situation.
- 2- In addition, Viet Nam is affected by 6-7 natural disasters (typhoons and floods) annually which destroy crops and food resources, as well as seed stock, fertilizers and other resources in vulnerable areas; this requires strategies and contingency plans for disaster risk reduction and damage control at the provincial and local levels.

VI. CONCLUSION (Cont.)

Challenge

If no natural disasters and others diverse factors Vietnam could ensure itself mainly food security. Other way, by no means, Vietnam also is facing a shortage of food or on the brink of a food security crisis, some of vulnerabilities are:

- 1- Vietnam agricultural and cultivated areas are confine compare with other countries-only 4.1 square km capita.
- 2- According UNDP forecast, Vietnam is one of five countries to face with rising effect of sea level due to global warming, salt-water, flooding (especially in Mekong Delta and sea beach areas...)
- 3- Decline in yields (e.g. rice) due to decrease in mean minimum temperatures crop destruction / losses due to flooding increase in food prices and effect on availability of food (reduction of stockpiles) in-migration into higher elevations expansion / extension of agriculture on marginal soils in higher elevations need for technologies and investments (e.g. water harvesting, reducing system losses).
- 4- The research and development of agricultural technology are facing serious challenges posed by sharp increase of food price and energy price in a short run, and food security and sustainability in a long run.

VI. CONCLUSION (Cont.)

Policy

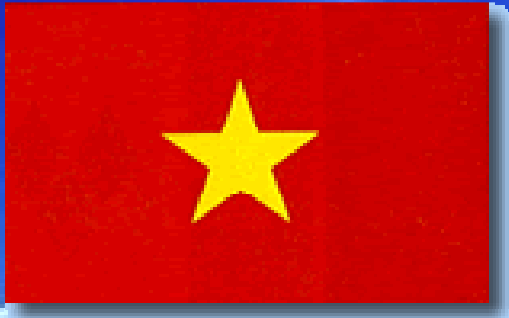
- To ensure food security, response to these alarming trends, the importance of the potential effects of climate change on agricultural production as common to a country. Vietnam should be strengthened to start:
- One priority should be to strengthen functional areas of government, information/data systems across the relevant government agencies, and to ensure this data is used to identify more precisely the different vulnerable segments of the population.
- It is also important to strengthen the evidence base for an improved policy response. In the first place, specific patterns of vulnerability and the impact of higher food prices on vulnerable groups will have to be further researched and documented. In addition to this, it will be important to strengthen national information systems including for nutritional sentinel surveillance, food security & early warning, and market information. An area of priority is the need to bring together different data in a coherent, multi-sartorial analysis linking potential causal factors (policies, price trends, etc.) to actual impact on the population in general and vulnerable groups in particular.

VI. CONCLUSION (Cont.)

- The Government could promote a more sustainable regional trade policy including preferential arrangements for regional food imports, long term contractual arrangements with main exporters and import market guarantees. Emergency food (rice) stocks are too small and inappropriate for market stabilization, and only for localized emergencies. Above all, there is a need for appropriate and transparent information on domestic and international markets coupled with a credible consultative mechanism.
- Advance planning for responding to anticipated climate change risks, puts emphasis on the need to adapt to the changes, such as using appropriate means and technologies in all sectors, especially crops that need less water (such as aerobic instead of irrigated rice, and sorghum instead of maize) or varieties of existing crops resistant to heat and water stress et.
- In the longer term, it is necessary to ensure that the Vietnamese agriculture and food system is capable of meeting Vietnam's basic food security requirements in coming decades. In policy terms, this can only be achieved through a policy approach that takes into consideration the various dimensions that intervene in assuring food security along the food supply chain, and is able incorporate policy interventions in the spheres of agricultural production, agricultural marketing and distribution, food safety and quality control, land policy, international trade, or competition policy, in a consistent and sustainable way.

VI. CONCLUSION (Cont.)

- Plan and investment in place for public campaigns, awareness raising, and disaster preparedness by local authorities/interest groups/associations/schools, and raise awareness among younger generations, preparing them for possible future challenges;
- Being developed on disaster preparedness, deal with in-migration into areas of higher elevation, and the educational curriculum in schools being amended/adapted to inculcate information about anticipated risks.
- Development planning and finance in GMS and others countries, organizations such as UN, FAO, development partners, multilateral banks, private sector financial institutions planning for large scale investments in adaptation measures such as ensure accurate and timely prediction/ forecasting to reduce high risk and damage from anticipated climate change impacts.



Thank you
for
attention

