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BRIEFLY REPORT ON 2006-2007 WINTER-SPRING DROUGHT STATUS IN SOUTH CENTRAL AND HIGHLAND AREAS IN VIETNAM

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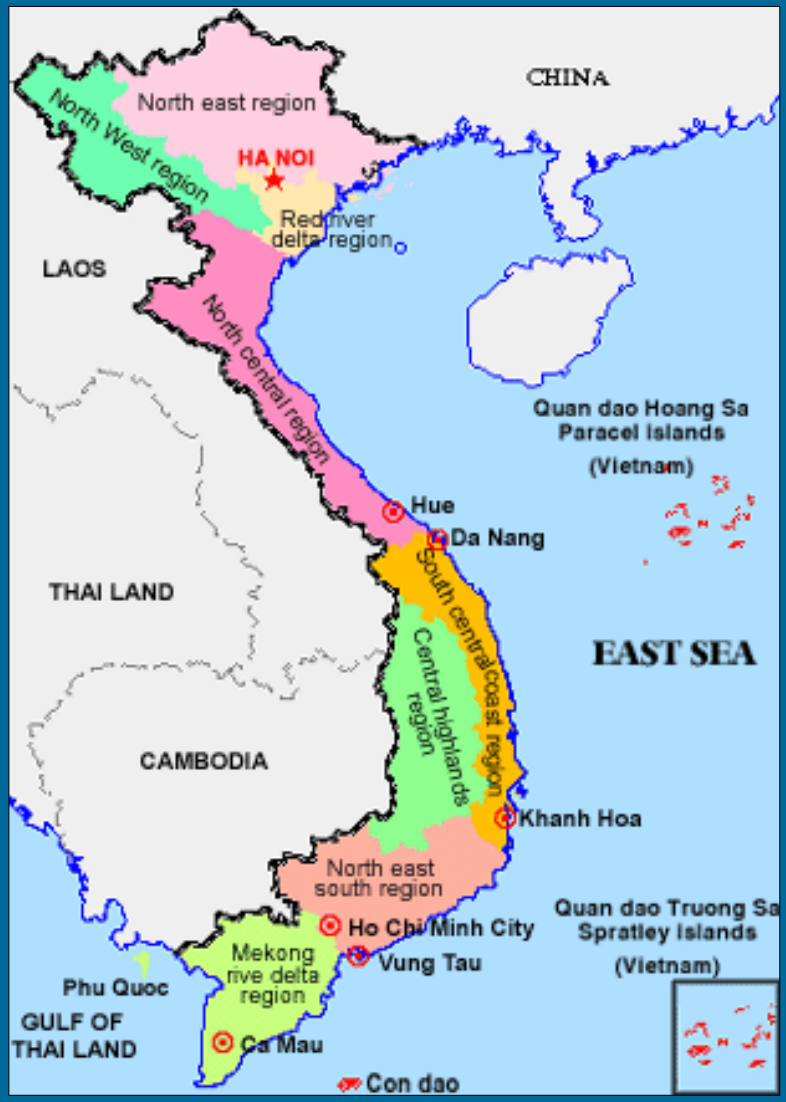
I. Introduction.



- Gross area : 330,991 km^2.
- Population : 84 million.
- Density : 253 people/ km^2.
- 75% of Vietnamese lives in rural areas.
- Ratio of agriculture : 22%.
- Economic growth : 7.5% per year (1995 to now).
- Agricultural growth : 4-4.5% per year.

I. Introduction.

- **South Central area (4):**
  Phu Yen, Khanh Hoa, Ninh Thuan, Binh Thuan
- **Highland area (5):**
  Lam Dong, Dak Nong, Dak Lak, Gia Lai, Kon Tum

Hight damage of drought

2006-2007 WINTER-SPRING DROUGHT STATUS IN SOUTH CENTRAL AND HIGHLAND AREAS IN VIETNAM

II. Drought damage (until early May 2007)

1. For agricultural production

The highest water shortage and drought effected area was 260.530 ha in which 244.620 ha was in Central Highland. Total damaged area was 55.800 ha and 53.705 ha in Central Highland.

II. Drought damage (until early May 2007)

1. For agricultural production

Total unable planting area was 42.070 ha in which 30.100 ha located from Phu Yen to Binh Thuan provinces and 1940ha of Phu Yen Province changed to other crop.

II. Drought damage (until early May 2007)

1. For agricultural production

Total effected and death of planted forest is 5.525 ha and 1.3 million breed plant (mainly in Binh Thuan province).

II. Drought damage (until early May 2007)

1. For agricultural production

Total effected livestock was 382,300 (in Ninh Thuan, Binh Thuan and Gia Lai provinces)

II. Drought damage (until early May 2007)

1. For agricultural production

Some industrial companies did not have enough water for production and domestic use, for instance, Cam Ranh Sugar Cane Company, Da Nhim hydropower, Buon Ma Thuot and Nha Trang water supply works.

Da Nhim hydropower in the dry season

II. Drought damage (until early May 2007)

2. For living

The highest number of people who did not have enough water for domestic use was 1,371,353 equal to 280.440 households in which Highland area was 1,131,400 people equal to 225, 965 households. The highest number of hungry was 1,074,445 equal to 233,740 households in which Highland area was 833,175 people equal to 173,350 households.

II. Drought damage (until early May 2007)

The total estimated damage caused by drought, mainly for agriculture, forestry and livestock, was about 2 billion Vietnam dongs.

III. Main drought reasons

1. Unfavourable development of weather and water course

- This is the main reason caused the drought in this area. The rainy season in 2006 was ended earlier about 1 to 1.5 month than usual, total rainfall in the first ten months of the year is less than usual about 30 percentage in both volume and intensity. From September to the end of 2006, rainfall in Highland area, Ninh Thuan and Binh Thuan province was not significant, but high evaporation arranging from 170 to 240 mm per month.
- In the first five months of the year 2007, rainfall was less in the whole country, in Highland and South Central area the sun was burning hot for long time, light rain was happened in some regions but incomparable to evaporation with volume of 400 to 600 mm, some specific area was 700 mm.
- River flow and water level was lower than average from 20 to 60 percents, many small rivers and springs was exhausted, specially rivers located from Khanh Hoa to Binh Thuan provinces and in Central Highland. ground water level was lower than usual from 1 to 3 m, specially in Central Highland from 3-4 m.
- In first Winter-spring season, reservoirs was only storaged from 65 to 80 percents as compare with designed capacity, specially for reservoirs located from Khanh Hoa to Binh Thuan provinces, the storage was only 20 to 40 percents. Most of reservoir’s water level in this area were lower than death level, some was completely dried (see table 1 for detail)

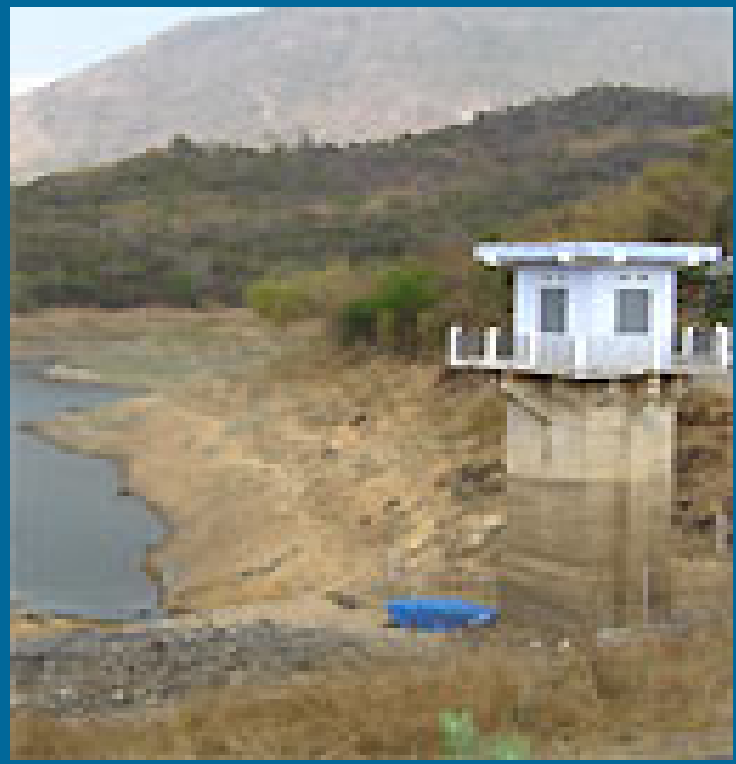
III. Main drought reasons

Table 1: Reservoir storage status

Province	Dried out reservoir	Lower than death level
Ninh Thuan	Ong Kinh, CK7, Suoi Lon, Thanh Son	Tan Giang
Binh Thuan	Song Long and many small reservoirs	Medium and large reservoirs
Khanh Hoa		Cam Ranh, Suoi Trau
Dak Lak	Krong Buc Ha	Buon Jong and Eakao
Lam Dong	Than Tho, Loc Qui, An Son, Da To Tong	
Gia Lai	Ia Rung	

Cam Ranh Reservoir

Water level lower than death level



Suoi Hanh Reservoir

III. Main drought reasons

2. Agriculture production development not follow the plan and water availability

- In some provinces, agriculture production development did not follow the plan, for example, In Dak Lak province the coffee plant area for the year of 2010 is about 160 to 170 thousands ha but in fact the coffee area was 265,000 ha in 2000 and 235,000 ha in 2003. In addition, crop is planted in disadvantage topography such as in high slope area or water unavailable or exceeding water supply capability.
- The over exploitation of forestry land for agriculture development had leaded to reduce the coverage causing rapidly the depletion of water after rainy season.
- Water demand for domestic, urban and industrial use is also sharply increasing.

III. Main drought reasons

3. High water demand, low water resources development

- Even the Government has invested a lot of resources and fund for hydraulic work construction aiming to meet the demand of living and production but actually as result of rapidly social-economic development, the investment could not reach the requirement of water.
- The regulation and allocation of water between rainy and dry season is limited and not meet practical requirement because of lacking hydraulic works. For instance, the amount of supplement water for dry season in Dak Lak and Dak Nong provinces is estimated about 400 million m3, and Ninh Thuan is about 250 million m3 etc...
- For available hydraulic works, the designed frequency is lower and not appropriate to social-economic development requirement. (currently, the irrigation designed frequency is commonly at P=75%).

III. Main drought reasons

4. Constraint in management.

Experience and technology applied in operation and management of hydraulic work is weak, on farm water management is in efficient causing high water losses in system.

IV. Practical solutions

In this report, the solution is only situation solution, the long term solution is not mentioned, the detail solution are as follow:

1. Conducting drought fighting and prevention

a. The Government has issued instructions and organized meetings to conduct central and local agencies to apply drought fighting measures timely to ensure people living conditions and water for production and living requirement.

b. Ministries, agencies within their function closely cooperate with MARD to guide, supervise and mobilize the application of drought prevention measurements in accordance with each local conditions.

c. Local authorities had also issued legal documents and applied practical measures for drought mitigations.

IV. Practical solutions

2. Technical solutions for drought prevention

a. Strengthen the management of available water resources and tried to find other water sources, water had allocated efficiency and safety depending on level of priority: first for domestic use, for livestock, for industry and agriculture.

b. Tried to rehabilitate irrigation facilities including dredging system canals and take full advantage of available facilities and water supply means.

Tea Irrigation in Lam Dong Province

Sugar Cane Irrigation in Tayninh Province

IV. Practical solutions

2. Technical solutions for drought prevention

c. Changed production plan, including crop patterns (from paddy to highland crop or less water requirement crops), prepare seeds and necessary conditions to recover agriculture production. Remove livestocks to area where water is available.

d. To assist people in drought effected area by providing food and money transparently.

e. Provide information about water resources status and it's trend and encourage people to participate to mitigate drought effects and save water use.

Maize Irrigation

IV. Assistance identification

The assistance for the effected area are as follows:
Constructs water supply works for the area of water shortage, provide water jar and water container for people who living scattered.
Rehabilitate or lining canals to reduce water losses in system;
Provide seed and fertilize to recover production in high damaged areas.


Thank you for your attention