

Laos Country Paper for the Third Annual Mekong Flood Forum

*Prepared by
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1. General Overview

Lao PDR is a landlocked country, which located in the Southeast Asia between latitudes 14⁰ and 23⁰ North and longitudes 100⁰ and 108⁰ east. The Country covers an area of 236,800 square kilometers and has bordered with China in the North, Myanmar in the Northwest, Kingdom of Thailand in the west, Socialist Republic of Vietnam in the East and Kingdom of Cambodia in the South.

Lao PDR is also lying along middle part of the Mekong, which is the twelfth longest river in the world. It flows through Lao territory from North to the South almost 1,860 Kilometers and forms one of the mightiest river systems of the region. Climate is governed by Southwest monsoon in the period of May to the end of October. Some years Laos is affected from Typhoon, which is formed in the Pacific Ocean and move through South China Sea to the middle of Vietnam and hit to Luang Mountain and then move to the North of Lao and enter to the Mekong Basin.

Due to territory of Lao PDR approximately 70% comprises of mountains and plateaus. The topography of Lao with combination between mountains and plateaus is formed almost 202,000 Km² watershed and catchment areas, which more than 35% contribute of the whole Lower Mekong Basin runoff. These geographical features with combination of the storms and monsoons (severe rain) that bring the flood hazards to properties also lives of the people living along the Mekong River and its tributaries in Lao PDR from past until now.

In Lao PDR droughts and foods are the most common natural disasters. Fires agricultural pests and rodent infestation are also common problems influencing food availability and stability either droughts or foods may occur somewhere in the country during any year and both occur in some years as happened in three years from 1991-1993.

Floods have the greatest macro-economic impact on the country and affect a greater number of people, as the areas affected are the primary locations of economic activity and contain 63% of the country population. Floods mostly affected central and southern provinces of the country. 27 'major' floods have occurred over the past 35 years with an average reoccurrence of one every 1.5 years. 1995 and 1996 experienced the worst flooding with over 28% of the country's paddy crop destroyed and extensive damage to road and public infrastructure.

Flash floods also occur in the upper reaches of the Mekong tributaries and in the hill areas of northern Laos mainly caused by severe deforestation; generally the effects are destructive but brief and localized.

Lao PDR has largest per capita availability of fresh water in Asia but the annual rainfall is quite variable in some parts of the country, several Northern provinces are prone to droughts as are areas of higher elevations in provinces close to the Vietnamese border. The effects of drought were particularly severe in 1977, 1983, 1988, and successively in 1993 and 1994 in the north.

Flood in Lao PDR is occurred year by year and depends on the natural phenomena. Usually, in late of May to the end of October, the Southwest monsoon comes from India through Myanmar to the Northern Lao and resulted long lasting and heavy rain. Other way is effect from Typhoon, which comes from Pacific Ocean through South China Sea to the middle part of Vietnam and Laos, this resulted also long lasting and heavy rain. In the period of August and September each year, rainfall and water level is rising up to maximum level.

Flood in Lao PDR is a natural phenomenon and educes every year in the Lower Mekong Basin. Especially, in the Lao PDR now the flood cycle is very short and effected too large area of the territory of Laos such as affected the paddy field. Therefore, we should be found the reason to protect the flood in the Lower Mekong Basin.

2. Flood and drought exposure and response

2.1 Flood

Lao PDR was seriously flooded in 2003-2004, due to the geography of Lao PDR almost 70% of the country is comprises of mountainous areas, therefore, the elevation is also differed from the North to the South. The duration of flood is also different, in the North is lasts around 3 days, but this part are quite often occurs deluge (flash flood). For the low land part (plain areas) it lasts longer, nearly two weeks, because of back up water from the Mekong River to its tributaries, when the precipitation and water level is highest, particularly in August and September.

In the year 2004, the rain was rained normal in the beginning of wet season. Since January to 15, September 2004 the average of rain is amount 1.600 mm (normal is 1.700mm). During 06-13 September 2004 was very heavy rained and affected to the territory in Laos. Especially affect in the Vientiane Capital to the southern. As a result of an effect of strong Southwest Monsoon, water level at Mekong River and its tributaries dramatically increases and flood occurs at all southern in the country since 13-15 September 2004. This year had flooding in the southern provinces of Laos, as Vientiane, Capital of Lao PDR Khammoune, Savannaketh, Saravanh, and Champasack. As in this year, flood affected 06 Provinces, 23 Districts, 1,057 villages and 23,123 families (95,320 people); where 6,391 family losses.

2.1.1 Affect to agricultural land

- Planting area of the hold country = 47.421 ha
- Loss area of the hold country = 12.259 ha
- Cost estimated of amount = 17 bill. Kips (1,7 mill US\$)

2.1.2 Affect to irrigation system

- 33 of irrigation projects affected.
- 432 m of irrigation channel was damaged.
- Cost estimated of amount = 2,4 bill. Kips (2,4 mill US\$)

2.1.3 Affect to livestock and fishery

- 1,145 of poultry
- Fishponds = 325 ha.
- Cost estimated of amount = 1.00 bill. Kips (1 mill US\$)

2.1.4 Affect to infrastructure

Roads, hospitals, schools, houses, factories and others (no obvious data)

2.2 Drought (not available data)

2.3 Flood locations and affects

The flood of the year 2004 occupied many places, particularly along the Mekong River and its tributaries as such:

- A. Vientiane Province, here are two districts affected. Thoulakhom and LongNgum Districts are located downstream of Nam Ngum reservoir, in which 12 villages and loss area of paddy field of 2070 ha.
- B. Vientiane Capital City, in this city is three districts affected, in which 57 villages and loss of paddy field of amount 2709ha.
- C. Khammuane Province in this province was affected more than other, there are six districts were affected, 376 villages, 30786 people and paddy field loss 16100ha with total cost estimated amount 4,026 bill kip (4 mill US\$)
- D. Borikhamsay Province is affected by flood on 10-11 September 2004; there are two Districts affected and loss of area agriculture amount 3454 ha
- E. Savannakhet Province was affected 14888ha of paddy field and there are 6 Districts (details data NA)
- F. Champasack Province in this Province is affected 3 Districts and loss paddy field about 8200ha.

3. Flood Management in Lao PDR.

3.1 Administrative framework.

Prior to 1995, the operational responsibility for national disaster issues rested with the Ministry of Agriculture and Forestry; however in 1995 the government transferred the responsibilities to the Ministry of Labour and Social Welfare. Nonetheless, in operational terms, the responsibilities pertaining to disaster management continue to be exercised by various technical departments in several ministries. In response to the 1995 flood, a high-level National Flood Steering Committee was established to coordinate activities in the advent of floods and provide policy guidance.

1995, MLSW took responsibility – Mitigation and Relief Activities widely implemented with NGOs partners. (Post Disaster). In the process of developing its capacity to perform this role, NDMO was established in 1997, supported from UNDP.

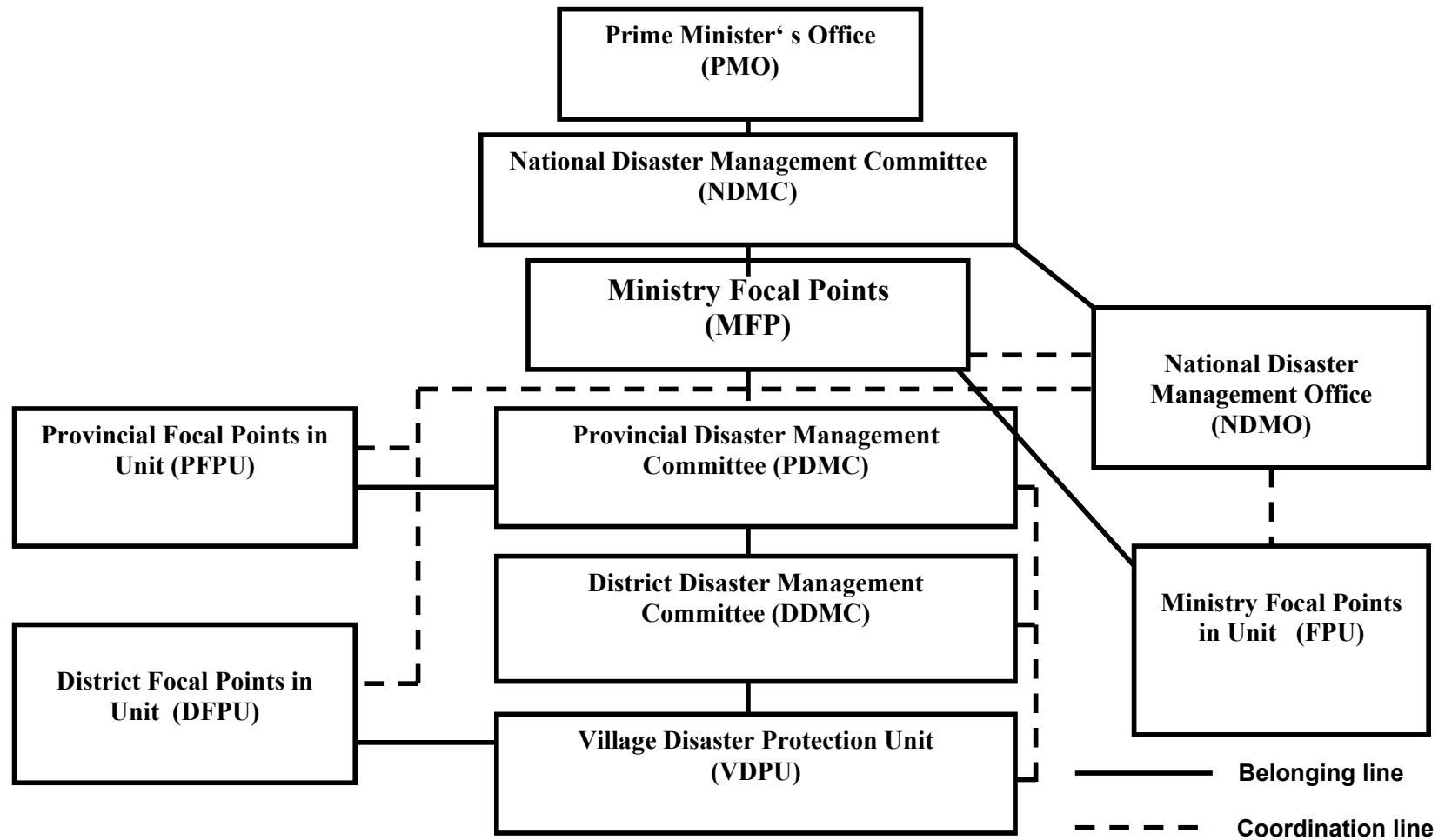
To deal with disaster, the Government has issued a landmark decree No. 158, signed by the Prime Minister in August 1999, provide for the establishment of an inter-ministerial National Disaster Management Committee (NDMC) as a policy making and coordination body.

This organization started from central government called NDMC and down to provincial, districts and village levels.

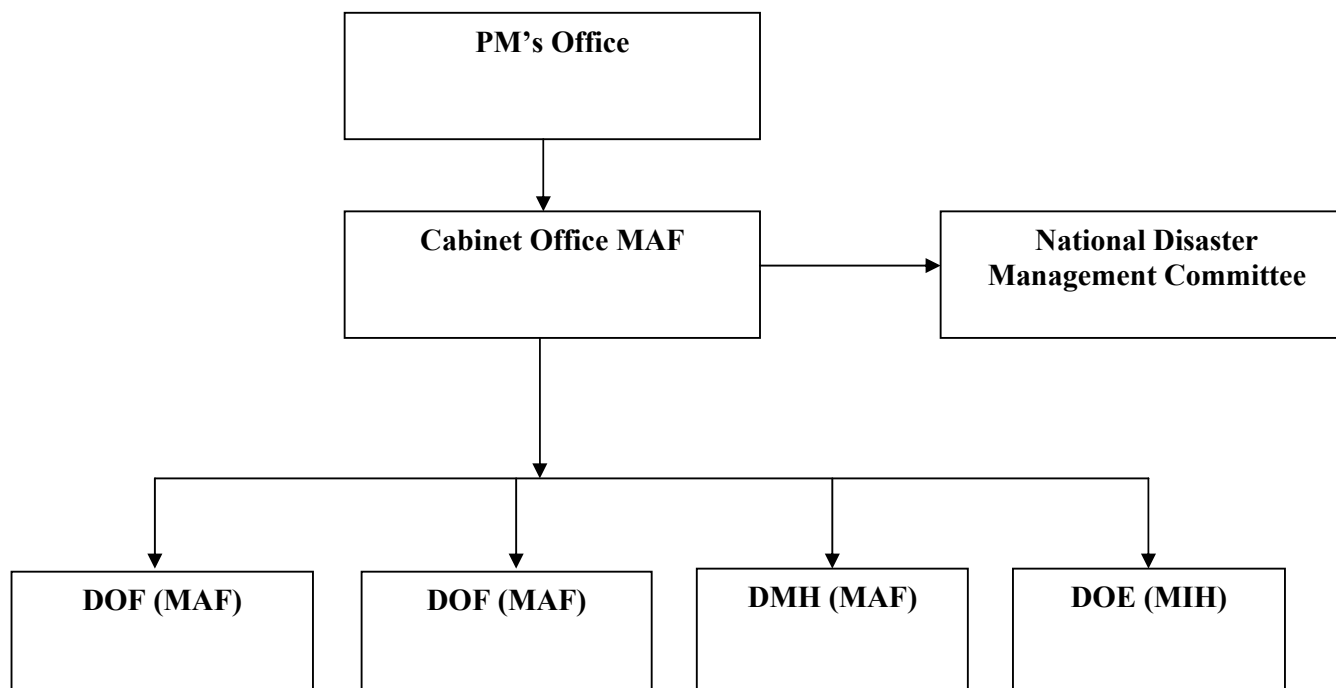
The National disaster management Office (NDMO) is played as a secretariat of the NDMC and has a key function to build coordination procedures among Disaster Management Organizations and with among Government Institutions, other agencies and stakeholders such as: UN, International NGOs and Organizations.

The flood management and mitigation in Lao PDR at the time being is under the supervision of the Prime Minister's Office, which comprises of different line Ministry and agency concerns such as: Ministry of Labor and Social welfare, Ministry of Agriculture and forestry, Ministry of Industry and Handicraft

Organization Chart for Disaster Management in Lao PDR



Ad hoc Flood Management Committee Flow Chart



To reduce disaster risks and contribute to poverty eradication, the Government set to achieve the following targets by 2005-2010-2020:

The aims to 2020 are:

Making Lao society safer and minimizing the impact of disaster to people life, country economy, government's and population property.

To timely assist to the victims of disaster helping they mitigate disaster impact and quick return to normalcy.

Building completed legal system on disaster management and prevention of disaster impact to individual, community, society and country economy.

Making disaster management concept and environmental protection as unique to development and becoming cultural perception of society.

The Goals to 2010 are:

- Establishment of DDMC at all districts.
- Establish DM focal points and contact persons in all major government agencies, units, privates, factories and other.
- Develop early warning information receiving points at risky to disaster villages.
- Establish storages at provinces and some vulnerable to disaster districts.
- Continue sustainable public awareness and education programs through media.
- Expand DM training in all sectors at various levels.
- Organizing drills and simulation exercises with participation of emergency rescue teams of sectors and population.
- Enhance capability on cooperation with ASEAN, region and international on exchanging of expertise, information on DM and joint implementing projects, simulation exercises and relief drills.

The Goals 2005 are:

- Establish DDMC with created their role and responsibility at 80% of total districts through out country.
- Establish DM focal points and contact persons as appropriate at:
 - 10% of total primary school
 - 20% of junior secondary school
 - 30% of upper secondary school
 - 50% of professional school
 - 80% of military division
 - 40% of factory.
- Develop DM regulation and code.
- Enhance and establish information dissemination system and receiving at 30% of total 142 districts in country. Establish information dissemination at 30% of vulnerable village.
- Annually organize 4 DM training courses for government officials and privates at provincial and district levels and 4 other courses for village leaders.

- Establish rescue and relief teams at VTE MUN, provinces base on manpower of military, police, schools and Lao Red Cross volunteer.
- Develop hazards and risk map of Lao PDR.
- Establish DM information exchange centre at the NDMO and urban disaster information at the Urban Research Institute (URI).
- Organize 2 rescue drills or simulation exercises on annual basic
- Integrating DM concept into other projects of urban and rural development with focused on flood, drought, fire, land management, bank erosion, water management, protection of environment, forest and other natural resources. NDMO is a centre focal point on implementation.

3.2 Flood Mitigation Measures

Flood is natural phenomenon and until now we cannot control it yet. But in our case, how to carry out the flood Management and Mitigation during flood period, especially from July to September. The Flood Management Committee has to work 24 hours for monitoring flood situations by the following steps:

3.2.1 Preparedness for Social lives

1. The committees work closely with Department of Meteorology MAF and Waterway Administration Division, Department of Road MCTPC, to follow weather forecasting and water level information and warn to the Province and District authorities on time, through mass media or by TV, Tel and Fax, in order to inform villagers to move their assets such as Cattle, Poultry to the safety places.
2. Check the flood protection sluice to see they are whether in good conditions or not, otherwise repair would be carried out in order to prevent over flows of the Mekong River bank into the farms or others important places.
4. Drainage pumping stations have to install at the mouth of discharge to the Mekong River
5. Filling low embankment and dykes.
6. Manage the Nam Ngum operation (reservoirs), during the flood period in order to release water at critical level.
7. Lay the sandbags on the flood prone area such as along the Low River bank and also temporary bank protection by different methods such as throwing down clay, soil or sandbags
8. Check and close water gate at the flood prone area
9. Ministry of Agriculture and Forestry and the Ministry of Labour and Social welfare has to work closely together, in order to help villagers, in case of emergency, such as evacuation and provide the accommodations, if there is needed.

3.2.2 Preparedness for Agriculture

The Ministry of Agriculture and Forestry together with Ministry of Labor and Social Welfare, particularly Department of Agriculture, MAF and the National Disaster Management Committee, MLSW have to work closely with provincial and also local Authorities, in order to get all harmful effects data of the hold country, to provide seed for farmers or villagers for secondary crops after flooding. Afterwards, these two agencies should arrange technical staff as well as other tools and equipment such as bio-fertilizers, pesticides ..., and help them in taking care of their crops until the harvesting season.

4. Lessons learned

- ◆ In dealing with disaster problem in Laos especially with flood in the past much more depended to the perceiving to problem of authority in organization and community themselves.
- ◆ To improve the flood forecast (Hydrological Network)
- ◆ To establish the flood warning center (notification warning)
- ◆ Establishing teambuilding on flood management and mitigation (High level and technical level)
- ◆ Public participation for all levels (awareness building the people to participate)
- ◆ To build and appropriate design the canal, flood gate and city canal with appropriate measures for realization in new term.
- ◆ The government should be allocated annual budget for all activities during and after flooding and for emergency relief to victims of disaster in country.
- ◆ To establish information units and network, develop disaster risk map (flood mapping) of Laos
- ◆ Raising public awareness, education campaign and program on disaster management through public media.
- ◆ To continue training program for all line ministry concerned, including at the community levels.

5. Recommendations

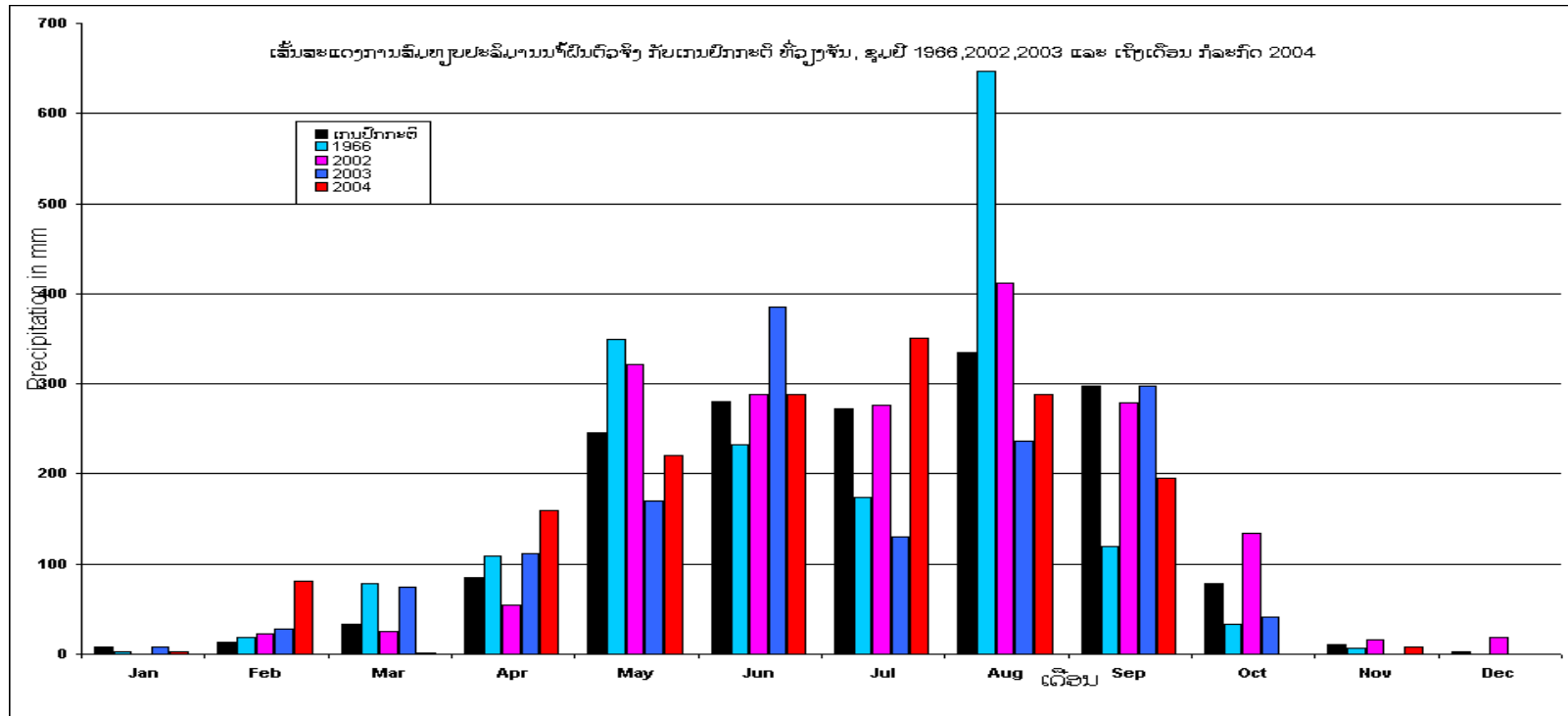
The Government or Committee should promptly act:

- 1) To help the priorities areas and visit the flood regions if necessary.
- 2) To continuously inform about the weather forecast and water level into newspapers, radio and television.
- 3) To manage the water level of each dams for protection when had flood.
- 4) To prepare technical officer into the site where is flooding for help people to replant.
- 5) To prepare and concentrate the people healthy after flooding.
- 6) The cabinet of disaster and flood committee should promptly take action and submit the result of flood to government for re-infrastructure, especially agriculture.

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Rainfall Data at Vientiane Station in 1966, 2002, 2003 and 2004

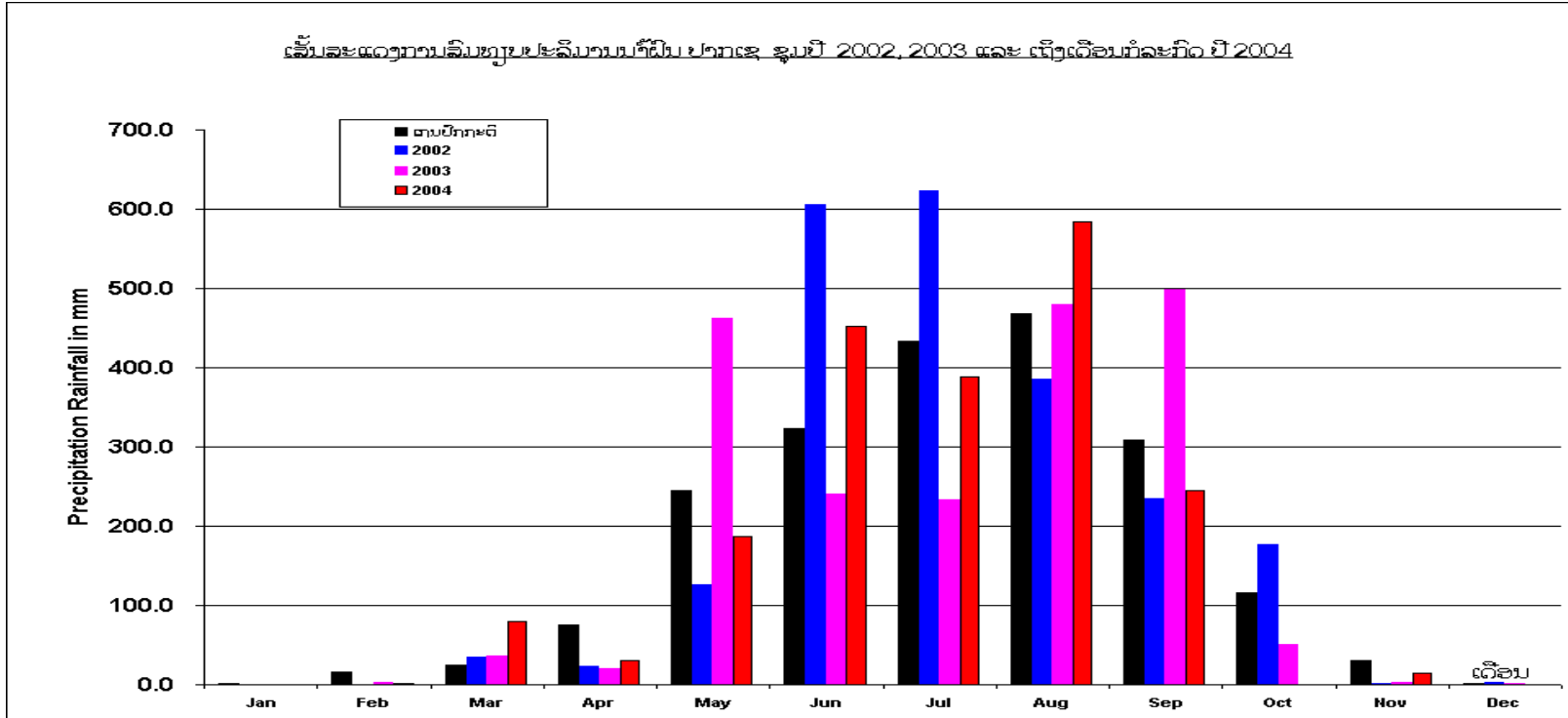
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|----------------------|-----|------|------|-------|-------|-------|-------|-------|-------|-------|------|------|--------|
| ໂຮງຮຽນ ປະຊາທິປະໄຕ | 7.5 | 13 | 33.7 | 84.9 | 245.8 | 279.8 | 272.3 | 334.6 | 297.3 | 78 | 11.1 | 2.5 | 1660.5 |
| 1966 | 2.4 | 18.7 | 78.4 | 109.5 | 349.3 | 232.7 | 174.3 | 646.7 | 119.5 | 33.5 | 6.0 | 0.0 | 1771.0 |
| 2002 | 0.4 | 22.4 | 24.8 | 54.4 | 322 | 288.3 | 276.6 | 411.2 | 279.2 | 133.6 | 15.5 | 18.3 | 1846.7 |
| 2003 | 8.4 | 27.7 | 73.8 | 111.8 | 169.8 | 384.8 | 130.1 | 235.8 | 297.2 | 41.6 | 0 | 0 | 1481.0 |
| 2004 | 2.3 | 81.3 | 1.8 | 159.7 | 220.4 | 288.8 | 350.2 | 288.1 | 195.7 | 0 | 8.2 | 0 | 1596.5 |



Laos Country Paper

Rainfall Data at Pakse Station in 1998,2000, 2002 & 2004

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|------|-----|------|------|------|-------|-------|-------|-------|-------|-------|------|-----|--------|
| 1998 | 1.8 | 16.3 | 25.0 | 75.2 | 245.0 | 323.6 | 433.6 | 467.5 | 308.7 | 115.9 | 29.8 | 2.0 | 2044.4 |
| 2002 | 0.0 | 0.0 | 35.0 | 23.0 | 125.8 | 605.3 | 623.8 | 384.8 | 235.2 | 176.7 | 1.3 | 2.6 | 2213.5 |
| 2003 | 0.0 | 2.2 | 36.7 | 20.0 | 462.7 | 240.2 | 233.1 | 480.2 | 498.7 | 51.2 | 3.3 | 0.8 | 2029.1 |
| 2004 | 0.0 | 2.1 | 79.6 | 31 | 187.5 | 451.5 | 388.6 | 583.7 | 245.4 | 0.3 | 15.2 | 0 | 1984.9 |

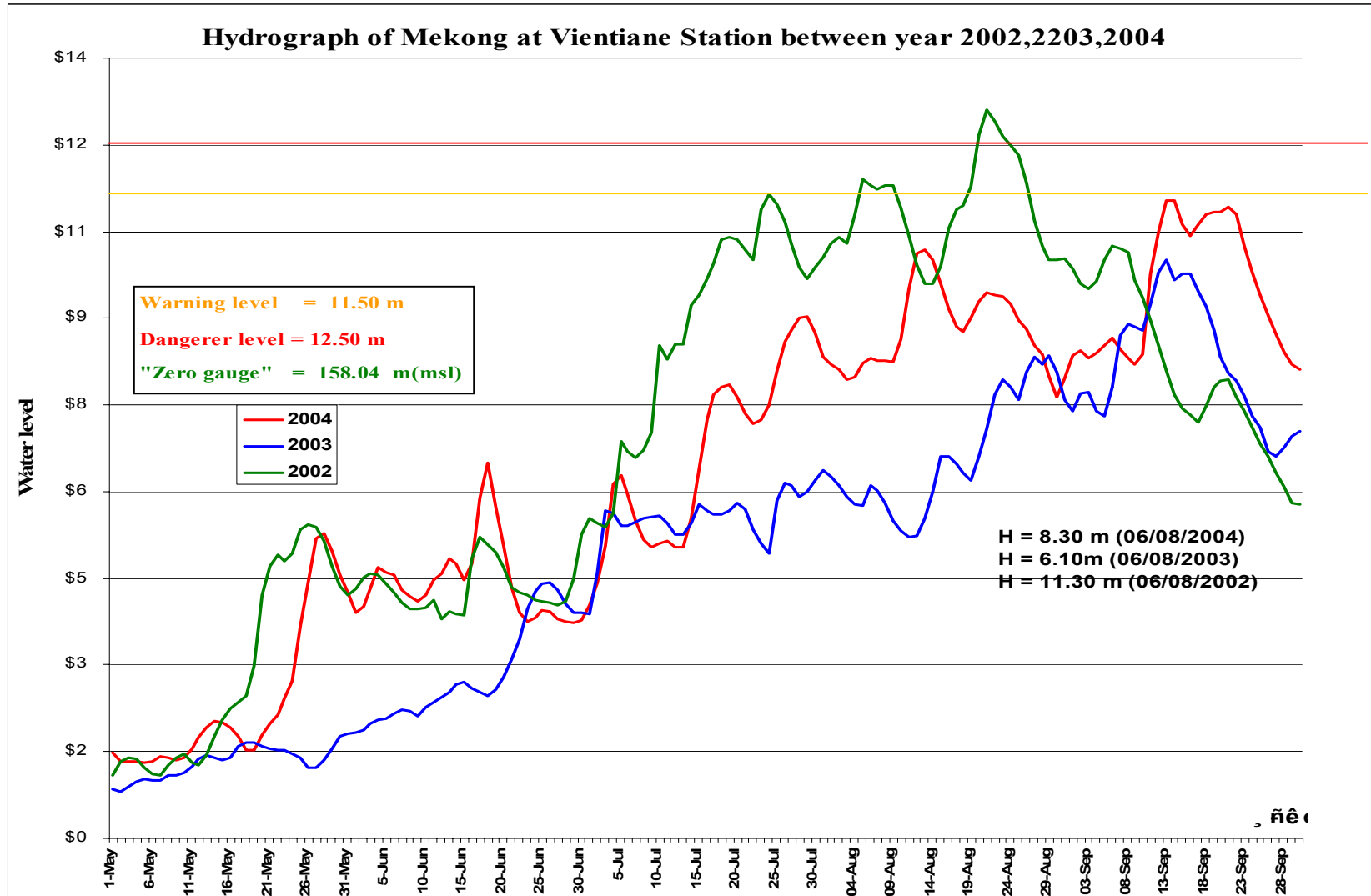


Laos Country Paper

Rainfall 2003-2004

| Station | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|--------------|------|------|------|------|------|-------|-------|-------|-------|-------|------|------|-----|--------|
| LuangPrabang | 2003 | 14.6 | 19.5 | 76.6 | 140 | 68.2 | 315.4 | 195.5 | 313.6 | 223 | 35 | 0 | 0 | 1401.0 |
| | 2004 | 15.3 | 0 | 0 | 143 | 240.5 | 162.4 | 286.9 | 233.5 | 117 | 166 | 27.8 | 0 | 1392.2 |
| Sayabouly | 2003 | 14.4 | 55.6 | 53.7 | 51 | 151.8 | 164.7 | 246.8 | 127.4 | 212 | 11 | 0 | 1 | 1089.2 |
| | 2004 | 11 | 9.2 | 31.3 | 165 | 156.6 | 110.9 | 179.8 | 201.1 | 359 | 0 | 40.1 | 0 | 1264.0 |
| Vientiane | 2003 | 8.4 | 27.7 | 73.8 | 112 | 169.8 | 384.8 | 130.1 | 235.8 | 297 | 41.6 | 0 | 0 | 1481.0 |
| | 2004 | 2.3 | 81.3 | 1.8 | 152 | 220.6 | 286.9 | 350.4 | 288.1 | 196 | 0 | 8.2 | 0 | 1587.7 |
| Paksan | 2003 | 7.3 | 42.6 | 30.7 | 78.3 | 399.0 | 699.9 | 723.8 | 771.8 | 573.6 | 16.8 | 0.0 | 0.0 | 3343.8 |
| | 2004 | 14.4 | 134 | 25.5 | 137 | 270.2 | 288.6 | 677.9 | 671.3 | 569 | 0 | 0.4 | 0 | 2788.2 |
| Thakhek | 2003 | 0 | 19.4 | 48 | 52.7 | 195.6 | 336.2 | 319.4 | 720.4 | 475 | 13.8 | 0 | 0 | 2180.1 |
| | 2004 | 7.5 | 80.2 | 41.2 | 107 | 206.5 | 319.2 | 291 | 816.4 | 457 | 5 | 1.2 | 0 | 2331.7 |
| Savannakhet | 2003 | 0 | 73.4 | 27.9 | 34.6 | 138 | 158.1 | 155.6 | 333.7 | 273 | 5.2 | 0 | 0 | 1199.4 |
| | 2004 | 7.7 | 72.3 | 92.8 | 44.1 | 282.6 | 128.1 | 491.3 | 323.5 | 207 | 0 | 0.8 | | 1650.2 |
| Pakse | 2003 | 0 | 2.2 | 36.7 | 20 | 462.7 | 240.2 | 233.1 | 480.2 | 499 | 51.2 | 3.3 | 0.8 | 2029.1 |
| | 2004 | 0 | 2.1 | 79.6 | 21.7 | 187.5 | 443.7 | 398.7 | 583.7 | 245 | 0.3 | 15.2 | 0 | 1977.9 |

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