DROUGHTS AND FLOODS
in the Lao People’s Democratic Republic

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Report on Droughts and Flood
In The Lao People’s Democratic Republic

Waterways Administration Division
Department of Roads
Ministry of Communication Transport Post and Construction
Vientiane, November 2003
Droughts and floods

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Lao in brief

- **Area:** Land locked, 236,800 sq km. 75% mountainous
- **Population:** 5.2 million (2000).
- **Capital city:** Vientiane.
- **Bordering:** China, Myanmar, Thailand, Cambodia and Vietnam.
- **Altitude:** 1,500 m above MSL.
- **Mekong River:** 1898 km and 22 main tributaries
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Climate conditions

- Warm, tropical climate zone and dominate by two monsoon
- The South-West monsoon: Mid May-Mid October, heavy and frequent rainfall and high humidity, wind, warm and wet.
- The North-East monsoon: November-Mid March, the atmospheric pressure is high, low temperature and humidity, cool dry air.
- Rainfall: 1,000-3,000 mm,
- Temperature: 15°C to 38°C
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Some characteristics of the monsoon

- Clear distinct between wet and dry season,
- Drought can occur during the wet season,
- The small dry season in June July,
- Rainy days can occur in the dry season,
- Typhoon are major cause of flooding,
- Maximum typhoon effect from 15º N upward,
- Peak typhoon month is September, October
Main hydrological stations at the Mekong River in Laos

1. Xieng Kok
2. Pak Beng
3. Luang Prabang
4. Pak Lay
5. Vientiane
6. Paksane
7. Thakhek
8. Savannakhet
9. Pakse
Droughts and floods

2. Drought damages

- **Where:** Vientiane Mun., Vientiane, Bolikhamxai, Khammoun, Savannakhe, Champasak
- **River:** Mekong river and 22 tributaries.
- **When:** August till November, during the monsoon
- **Why:** Heavy tropical storms, typhoons.
- **Damages:**

  The Drought in Lao PDR for the year 2002 has not occurred
**Droughts and floods**

### 2. Flood damages

- **Year:** 1961, 1966, 1971, 1978, 1984, ...
- **Where:** Vientiane Mun., Vientiane, Bolikhamxai, Khammoun, Savannakhe, Champasak
- **River:** Mekong river and 22 tributaries.
- **When:** August till November, during the monsoon
- **Why:** Heavy tropical storms, typhoons.
Droughts and floods

2. Flood damages

- Year: Damages:
  - In 1994 damaged 28,000 hectares
  - In 1995 damaged 87,300 hectares
  - In 1996 damaged 76,000 hectares, 260 hectares of fishponds were destroyed.
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2. Flood damages

- Flood in year 2002 was heavy and Vongfong-14 storm from Southeast Monsoon
  - Flash flood - 3 days in Northern & Centre (LouangNamtha, Phongsaly and Bolikhamxay)
  - Plain areas - 2 weeks in Lowland (Bokeo,
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2. Flood damages

- LouangPhabang, Vientiane, Borikhamxay, Khammoune, Savanakhet, Saravanh, Champasack and Attapeu

Flood affected 12 provinces; 43 Districts; 1,000 villages; 30,000 families; 8,556 household damages and 03 person died
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Affect to Agricultural land:

- **Planting Area** = 563.400 ha
- **Flooded Area** = 58.890 ha
- **Loss Area** = 37.300 ha
- **Cost Estimated** = 33 bill.KIPS (3.3mill.$)
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Affect to irrigation system:

389 of Irrigation Project
Cost Estimated = 37,3 bill.Kips (3,73 mill.$)

Irrigation Channel System Damaged
2,630 m of Irrigation Channel - Damages
Cost estimated = 37,3 bill.Kips (3,73 mill.$)
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Affect to Livestock & Fishery

76 of buffaloes and 17 of cows
151 of pigs and 3,840 of poultry

382 of domestic fishponds (265 ha)
58 of nursery ponds (13 ha or 450,000)

Cost estimated = 17 bill. Kips (1.7 mill.$)
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Other Affect

Roads, Hospitals, Schools, Factories, Etc.

(no obvious data)
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Flash flood

**Phongsaly:**
4D, 68V, 2280F, 12405pp

**Louangnamtha:**
1 Districts, 2 Villages, 94 Families, 480 people

**Oudomxay Province:**
2 D, 37 V, 947 F, 5,537 PP

**Xiengkhouang Province:**
3 D, 27 V, 176F, 556 pp

**Borikhamxay Province:**
5 D, 93V, 5666F, 28.028pp
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Flooded along the Mekong River

Lungprabang Province:
5 D, 39 V, 3507 F, 2046 PP

Vientiane Province:
2 D, 4 V, 80 F, 709 PP

Vientiane City
9 D, 95 V, 4.132 F, 21.405 pp

Borikhamxay Province:
5 D, 93 V, 5666 F, 28.028 pp
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Khammoune Province:
2 D, 69 V, 1.483 F, 7.860 PP

Savanakhet Province:
7 D, 120 V, 11.977 F, 46.333 PP

Champasak Province:
8D, 392V, 13679F, 79009pp

Attapu Province:
2 D, 28 V, 1682F, 6028 pp
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3. Structural measures

Flood protection dike

- Vientiane City: 74 km
- Paksane town: 2.5 km
- Thakhek town: km
- Savannakhet town: km
- Champasak town: 5 km
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3. Structural measures (cont.)

Water gate

- Vientiane City: 2
- Paksane town: 3
- Thakhek town: 4
- Savannakhet town: 2
- Champasak town: 3
3. Structural measures (cont.)

Pumping station

- Vientiane City:
- Paksane town:
- Thakhek town:
- Savannakhet town:
- Champasak town:
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3. Structural measures (cont.)

Drainage canal

- Vientiane City: 16.612 km
- Paksane town:
- Thakhek town:
- Savannakhet town:
- Champasak town:
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4. Non-Structural measures

The National Disaster Management Committee

- Minister of Ministry of Labour and Social Welfare, Chairman,
- Vice Minister of Ministry of Agriculture and Forestry, Vice chairman.
- Director General of the Cabinet of the Ministry of foreign Affair, Member,
- Director General of the Cabinet of the Ministry of Defense, Member
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- Director General of the Cabinet of the Ministry of Security, Member
- Director of the Budget Department of the Ministry of Foreign Affairs, Member,
- Director General of the Department of Transport of The Ministry of Communication Transport Post and Construction, Member,
- Director of the Industry Department of the The Ministry of Industry and Handicraft, Member,
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- Director of Hygiene and Prevention Department of the Ministry of Public Health.
- Director of the Mass Media Department of the Ministry of Information and Culture, Member,
- Director General of the Cabinet of The Ministry of Education, Member,
- Chairman of the Lao Red Cross Society, Member,
- Director of the Social Welfare Department of the Ministry Labour and Social Welfare, Member,
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Flood defense committee

1. Under Supervision of the PMO
   - Ministry of Labor and Social Welfare
   - Ministry of Agriculture and Forestry
   - Ministry of Industry and Handicraft

2. Ad Hoc FM Committee Flow Chart
**Flood mitigation measures**

Flood cannot control; but FMC should carry out:

1. Preparedness for social lives
   - Work closely with line agencies concerned
   - Check the flood protection sluice
   - Install pumping stations
   - Manage embankment and dykes
   - Manage Nam Ngum Dam operation
   - Lay down the sandbags
   - Help Villagers (in case emergency)
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Flood Response

MAF, MLSW, NDMC have worked closely with Provincial and Local Authorities:

- Got data & information on flood situation (whole country)
- Provided seed for farmers/Villagers after flood withdraw
- Requested for assistance from Donors
- Arrange technical staff, tools and equipment for helping flood victims
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Activities carried out during & after flood 2002 Flood Response

A. Problem solved

- Authorities concern visited flood areas
- Send technical staff to flood areas to collecting data & information on social economic damage
- Preparing the second crops, nursery, ponds etc
- Coordinate with local authorities to help flood victims as drinking water and food
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Recommendation

A. Immediate future: 2005-2010

- Civil construction & infrastructures build on the location higher than flood water level
- Agricultural production:
  - Cultivation will be started once flood withdraw
  - Cropping patterns & varieties change will be applied to double crops: October to July
- Selection of appropriate crop pattern that flood risk can be prevented (managed)
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- For frequently flooded areas along Mekong river & its tributaries, optimum solution is “Stay with flood”
- Residential accommodation works & industrial zone will be removed to higher locations
- Flood forecast & flood warning will be reached to community on time
- Improve & extend communication system
- Relief flood victims
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B. Long term period after 2010

- Construction of dike, sluice & drainage pumping station required to control & mitigate floodwater from Mekong river & tributaries
- Embankment & dyke system to control early flood
- Water logging drainage structures will be constructed in combination with flood control structures
- Build on-farm drainage system in specific areas
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- Meteo-hydrological stations should be completed including rain-gauge stations
- Information & data need to be collected & update annually on losses and damage caused by flood, flood marks, flood duration, flooded areas etc….These will be synthesized to assess flood reasons
- Residential areas will be removed to the upper areas
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National policy on flood management and mitigation

- Consolidating and further strengthening the institutional arrangements and capacity building of the LNFMMS.
- Developing effective disaster risk management plans and capacity at provincial and district level.
- Developing a community response capacity at the village level.
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National policy on flood management and mitigation

- Enhancing the capacity of the Lao National Flood Management & Mitigation Sub-committee authorities concerned through relevant training and development.

- Developing more effective early warning system for flood and droughts.

- Improving communication and information systems

LNFMMS-Lao National Flood Management & Mitigation Sub-committee.
Droughts and floods

Flood forecasting and warning

Hydrological stations

Waterways Administration Division response: 53
- Manual reading 44
- Automatic reading 7
- AHNIP 2

Department of Meteorological and Hydrology: 56
- Manual reading 36
- Automatic reading 20
Present forecasting stations

1. Xieng Kok
2. Pak Beng
3. Nam Ou (M. Ngoy)
4. Luang Prabang
5. Pak Lay
6. Vientiane
7. Paksane
8. Thakhek
9. Savannakhet
10. Pakse
Flood in Khammoun province
Flood in Khammoun province
Flood in Khammoun province
Strategy for national action plan

- Formation of LNFMMS,
- Revision of existing Policies and Plans,
- Study of International Models Practice,
- Participatory Planning with stakeholders,
- Identification of effected areas,
- Interim National Plan Report circulated for comment,
- Policy Forum on Flood Management & Mitigation.
Strategy for national action plan

- Final National Plan Report Prepared for approval.
- National Workshops and Training.
- Implementing an effective flood protection and mitigation strategy.
- Diversification of water resources for irrigation and management for sustainable utilization.
- Maintain watershed and mitigate environmental degradation.
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5. Regional cooperation

- Establish a regional flood information center,
- More and better exchange of information and experience,
- Support a regional flood warning system,
- Support flood mapping at community level,
- Support collection and transmission of reliable and accurate real time data,
- Support dissemination and understanding of forecasts,
First Southeast Asia Water Forum

Thank you
For your kind attention