The MRC Regional Stakeholder Forum

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Vientiane, Lao PDR

MRC Council Study - Navigation Thematic Area

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1. Background

- The planned navigation development scenarios M2 (2020) and M3 (2040) are based on the assumption of a sustainable 5% annual growth.
- To achieve this goal Actions were studied (on waterway design, port development, navigation safety, social, regulatory and environmental protection measures).
- In this Council Study Navigation Assessment, impacts from and on these navigation development scenarios with the other areas and with the socio-economic and environmental disciplines were calculated and assessed.


2. Planned development scenario M3 (2040)

- Eleven (ten) hydropower dams with locks, that should have some 12 lock operations per day.
- Green Triangle to Kratie: 500-ton vessels during the whole year including a bypass canal with three locks at the Khone Falls.
- Kratie to Kompong Cham: 2,000 DWT ships over the whole year.
- Kompong Cham to Phnom Penh: for 3,000 DWT ships,
- Phnom Penh (New Container Terminal) to Can Tho for 7,000 DWT ships.
- Can Tho to the sea for 10,000 DWT ships over the whole year.

2. Planned development scenario M3 (2040) (cont.)

- The Tonle Sap River and Lake between Phnom Penh and Chhong Kneas (Siem Reap): 500 ton over the whole year.
- About 9 new passenger ports and 7 new cargo ports in the Lao PDR and Cambodia.
- Several actions on aids to navigation, rules and regulations concerning navigation safety, carriage and handling of dangerous goods and environmental protection.

To achieve the goal of the scenario, investments for a total amount of $560 million (23.4 million US$ per year) are needed, excluding a bypass canal at the Khone Falls with an estimated cost of $525 million.

3. Socio-economic impact

- With these investments, waterborne **cargo transport** in the river will increase from 22.9 million tons in 2017 to 167.9 million tons in 2040, i.e. **7.3 times** more;
- Waterborne **passenger transport** will increase from 70.2 million (of which 0.8 million tourists) in 2017 to 318.9 million (of which 6.1 million tourists) in 2040, i.e. **4.5 times** more;
- The net present **economic value** of the navigation sector will increase from $15.1 billion in 2017 to $76.3 billion in 2040, i.e. **5.1 times** more;
- In 2040, some $121.6 million income can be generated from river tourism, compared to some $16.3 million today;
- Employment in the navigation sector will raise from about 750,000 people today to 1,875 million people in 2040.

4. Environmental impact

- IWT vessels can carry larger volumes of cargo relative to the extra fuel needed, resulting in 60% lower emissions per ton-km compared to road transport;
- There will be a neglectable impact of navigation development scenarios on water quantity, timing and sediment content;
- There will be a limited negative impact of navigation development scenarios on aquatic life, animals, residents, villages and towns during construction (clearing rapids and dredging);

4. Environmental impact (cont.)

- There will be a limited negative impact of navigation development scenarios on water quality during operations (oil spills and waste generation);
- There will be no significant impact on the ALU (Agriculture and Land Use), FPF (Flood Protection Infrastructure), IRR (Irrigation) and DIW (Domestic and Industrial Water Use) development and sub-development scenarios from the navigation development scenario.
- There will be no significant negative impact from Climate Change on the navigation development scenarios;
- There will be a positive impact of the navigation scenarios on the greenhouse gas emissions.

5. Hydropower impact

- In the upstream reservoirs, created by the hydropower dams, sufficient water depth over the whole year will be created to allow bigger ships to sail in the related stretches of the river;
- Without the hydropower dam reservoirs, the cost-benefit of necessary river design works (dredging, rapid and reef removal) to allow bigger ships to sail during the whole year would certainly be negative;
- In a second navigation development scenario, where not all the downstream dams (between Savannakhet and Kratie) should be built, the activities on channel improvement between Savannakhet and Kratie and on the construction of the bypass canal on the Khone Falls are cancelled (total estimated cost of $625 million).

5. Hydropower impact (cont.)

- The main disadvantage of waterborne transport is that it is slower than road or rail transport. In the near future, insufficient navigation will generate only one or two lock operations per day at the hydropower dams and this will create additional delays.
- In the M3 (2040) scenario, it was calculated that about 12 lock operations per day should be necessary, so that the delays can be reduced to 30 at 45 minutes per simple or double lock-lift.

6. Thailand

- As planned, the Thai investments in fleet renovation, waterway design, waterway safety and port development for the period 2017-2040 are estimated at $90 million ($3,8 million per year of which 95 % in loans);
- With these investments:
  - cargo transport will increase from 1.2 million tons in 2017 to 7.4 million tons in 2040, i.e. 6.2 times more,
  - passenger transport will increase from 0.4 million people (of which 0.2 million tourists) in 2017 to 1.3 million people (of which 0.8 million tourists) in 2040, i.e. 3.3 times more
  - net present economic value of the navigation sector will increase from $0.8 billion in 2017 to $3.4 billion in 2040, i.e. 4.3 times more;

6. Thailand (cont.)

  - some 3.2 million tons per year (160,000 20-ton trucks) will be shifted from road to waterway, avoiding road congestion and reducing air pollution;
- The proposed channel improvement activities in the Thai stretches of the river consist mainly of the clearing of rapids and rock removal. Due to the reef removal, fishes will lose some habitat but macroscopically speaking, the navigation scenarios will not cause any significant change to the ecological system of the Mekong River and it will have minor negative impacts on the long-term behaviors of the fishes in the River.
- But this doesn’t take away the strong recommendation to carry out thorough surveys and environmental impact assessment studies for each intervention in the waterway.

7. Lao PDR

- As planned, the Laotian investments in fleet renovation, waterway design, waterway safety and port development for the period 2017-2040 are estimated at $199 million ($8.3 million per year of which 95 % in loans);
- With these investments:
  - cargo transport in the Lao PDR will increase from 0.7 million tons in 2017 to 6.4 million tons in 2040, i.e. 9.1 times more,
  - passenger transport will increase from 2.9 million people (of which 0.2 million tourists) in 2017 to 13.1 million people (of which 1.3 million tourists) in 2040, i.e. 4.5 times more,
  - the net present economic value of the navigation sector will increase from $0.4 billion in 2017 to $2.2 billion in 2040, i.e. 5.5 times more;

7. Lao PDR (cont.)

  - Some 6.3 million tons per year (315,000 20-ton trucks) will be shifted from road to waterway, avoiding road congestion and reducing air pollution;
- The proposed channel improvement activities in the Lao PDR consist mainly of the clearing of rapids and rock removal. Due to the reef removal, fishes will lose some habitat but macroscopically speaking, the navigation scenarios will not cause significant change to the ecological system of the Mekong River and it will have minor negative impacts on the long-term behaviors of the fishes in the River.
- Also here, it is strongly recommended to carry out thorough surveys and environmental impact assessment studies for each intervention in the waterway.

8. Cambodia

- As planned, the Cambodian investments in fleet renovation, waterway design, waterway safety and port development for the period 2017-2040 are estimated at $228 million ($9.5 million per year of which 95 % in loans);
- With these investments:
  - cargo transport in Cambodia will increase from 2.9 million tons in 2017 to 20.6 million tons in 2040, i.e. 7.1 times more,
  - passenger transport will increase from 1.9 million people (of which 0.1 million tourists) in 2017 to 8.8 million people (of which 0.6 million tourists) in 2040, i.e. 4.6 times more,
  - the net present economic value of the navigation sector will increase from $1.9 billion in 2017 to $9.5 billion in 2040, i.e. 5.0 times more;

8. Cambodia (cont.)

  - Some 12.5 million tons per year (625,000 20-ton trucks) will be shifted from road to waterway, avoiding road congestion and reducing air pollution;
- The proposed channel improvement activities in Cambodia consist mainly of some 24 million m^3 of dredging of which some 12 million m^3 in the Great Lake. The long-term impact of dredging will not cause significant change to the ecological system of the Mekong River and it will have minor negative impacts on the long-term behaviors of the fishes in the River. Nevertheless, special attention should be given to the biosphere of the Great Lake by an exhaustive Environmental Impact Assessment study.

9. Viet Nam

- As planned, the Vietnamese investments in fleet renovation, waterway design, waterway safety and port development for the period 2017-2040 are estimated at $42 million ($1.8 million per year);
- With these investments:
  - cargo transport in Vietnam will increase from 18.1 million tons in 2017 to 133.5 million tons in 2040, i.e. 7.4 times more,
  - waterborne passenger transport will increase from 65.0 million people (of which 0.3 million tourists) in 2017 to 295.7 million people (of which 3.4 million tourists) in 2040, i.e. 4.5 times more;
  - the net present economic value of the navigation sector will increase from $12.0 billion in 2017 to $61.2 billion in 2040, i.e. 5.1 times more.

9. Viet Nam (cont.)

  - Some 69 million tons per year (3.5 million 20-ton trucks) will be shifted from road to waterway, avoiding road congestion and reducing air pollution.
- The proposed channel improvement activities in Vietnam consist mainly of some 2 million m^3 of dredging on the Mekong-Vam Nao-Bassac stretch of the river. The long-term impact of dredging will not cause significant change to the ecological system of the Mekong River and it will have minor negative impacts on the long-term behaviors of the fishes in the River.

10. Conclusions

- When no inland waterway transport investments are made, inland waterway transport growth in the Lower Mekong River Basin will be very low and in some stretches of the river there will be even no growth or a decline, due to strong competition of faster (but more expensive and polluting) road transport.
- This means that the navigation development scenario 2040 only can be sustainable if a lot of fleet, port and waterway safety measures are carried out and if all development projects are submitted to rigorous Environmental Impact Assessment and Social Impact Assessment studies.

Thank you