



ด่วน

กลุ่มงานบุคคล
เลขที่รับ 4467
วันที่ ๒๑ ก.ค. ๒๕๖๐
เวลา 15.27 น.

คัมภีร์

สำนักบริหารกลาง
รับที่ 4710
วันที่ ๒๑ ก.ค. ๒๕๖๐
เวลา ๑.๐๖ น.

บันทึกข้อความ

ส่วนราชการ สำนักบริหารจัดการลุ่มน้ำโขง ส่วนจัดการองค์ความรู้ลุ่มน้ำโขง โทร. ๐ ๒๒๔๘ ๖๖๐๕

ที่ ทส ๐๖๓๐/๑๒๘๖

วันที่ ๒๐ กรกฎาคม ๒๕๖๐

เรื่อง รับสมัครผู้เชี่ยวชาญระดับชาติ ๖ ตำแหน่ง เพื่อสนับสนุนโครงการศึกษาริเริ่ม (Initial Study) ระยะที่ ๒

เรียน ผู้อำนวยการสำนักบริหารกลาง

ด้วย สำนักงานเลขาธิการคณะกรรมการแม่น้ำโขง (Mekong River Commission Secretariat: MRCS) มีหนังสือเลขที่ L-MRCS (TD) 479/17 ลงวันที่ ๑๑ กรกฎาคม ๒๕๖๐ แจ้งว่ากิจกรรมการบริหารจัดการและบรรเทาอุทกภัย ภายใต้แผนการดำเนินงานเพื่อสนับสนุนโครงการศึกษาริเริ่ม (Initial Studies) ระยะที่ ๒ มีความประสงค์จะรับสมัครผู้เชี่ยวชาญระดับชาติ (National Expert) จำนวน ๖ ตำแหน่ง ดังนี้

๑. ผู้เชี่ยวชาญด้านการจัดการอุทกภัย National Flood Management Expert (NFE)
๒. ผู้เชี่ยวชาญด้านแบบจำลองอุทกวิทยา National Hydrologic/Hydraulic Modelling Expert (NHME)
๓. ผู้เชี่ยวชาญด้านการวางแผนการเกษตร National Agriculture Planning Expert (NAPE)
๔. ผู้เชี่ยวชาญด้านการวางแผนเศรษฐกิจและสังคม National Socio-economic Planning Expert (NSPE)
๕. ผู้เชี่ยวชาญด้านการวางแผนการใช้ที่ดิน National Spatial/Land-use Planning Expert (NLUPE)
๖. ผู้เชี่ยวชาญด้านการวางแผนการขนส่งคมนาคม National Transport Planning Expert (NTPE)

โดยผู้สมัครต้องมีคุณสมบัติตาม ToR (Terms of Reference) ดังรายละเอียดตามเอกสารแนบ

สำนักบริหารจัดการลุ่มน้ำโขง จึงขอความร่วมมือสำนักบริหารกลางปิดประกาศและประชาสัมพันธ์ เพื่อเชิญชวนผู้สนใจและมีคุณสมบัติตรงตามลักษณะงานดังกล่าว ส่งใบสมัครพร้อมประวัติส่วนบุคคลและรูปถ่าย มายังสำนักบริหารจัดการลุ่มน้ำโขง กรมทรัพยากรน้ำ ตามที่อยู่เลขที่ ๑๘๐/๓ ถนนพระราม ๖ ซอย ๓๔ แขวง สามเสนใน เขตพญาไท กรุงเทพฯ ๑๐๔๐๐ หรือทางจดหมายอิเล็กทรอนิกส์ tnmc.t@dwr.go.th โดยสามารถดูรายละเอียดเพิ่มเติมและ Download MRC Personal History Form ได้จาก <http://division.dwr.go.th/TNMC/> ซึ่งจะปิดรับสมัครในวันที่ ๒๕ กรกฎาคม ๒๕๕๘ ทั้งนี้เพื่อจะได้ประสานการดำเนินการต่อไป

จึงเรียนมาเพื่อโปรดพิจารณา

- เรียน ☐ ผอ.กสบ. ☒ ผอ.กบด. ☐ ผอ.กคพ.
☐ ผอ.กขอ. ☐ ผอ.กปส. ☐ ผอ.กยส.
☐ ผอ.กคจ.
☒ เวียน ☐ เพื่อทราบ
☐ ถือปฏิบัติ ☒ พิจารณาดำเนินการ
☐ อื่นๆ

(นางสุนทร มิ่งประยูร)
ผู้อำนวยการสำนักบริหารกลาง
๒๑ ก.ค. ๒๕๖๐

คุณพัชรวิภา
๒๔/๗/๖๐

(นางสาวนวลละออ วงศ์พินิจโรตม)
ผู้อำนวยการสำนักบริหารจัดการลุ่มน้ำโขง

- เรียน ☐ ผ.บริหาร ☒ ผ.สรรหา ☐ ผ.ทะเบียน
☐ ผ.พัฒนา ☐ ผ.โครงการสร้าง ☐ ผ.สวัสดิการ
☐ เวียน ☐ เพื่อทราบ ☒ ดำเนินการ
☐ อื่นๆ.....

(นางสาวรัตน โหมดเทศ)
นักทรัพยากรบุคคลชำนาญการ
ทำการแทน ผู้อำนวยการกลุ่มงานบุคคล



Mekong River Commission

P.O. Box 6101, 184 Fa Ngoum Road, Unit 18,
Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Telephone: (856-21) 263 263. Facsimile: (856-21) 263 264

สำนักงานอธิบดี
เลขที่รับ... 6365
วันที่... ๑๓ ก.ค. ๒๕๖๐
เวลา... 12.09

กรมทรัพยากรน้ำ
รับที่ 05573
วันที่... ๑๓ ก.ค. ๒๕๖๐
เวลา... 14.59 21

No. L-MRCS (TD) 429/17

Dear JC Members,

Subject: Recruitment of National Experts for Initial Studies Stage-2.

14 July 2017

สำนักบริหารจัดการลุ่มน้ำโขง
เลขรับที่ ๑๑๔๗
วันที่ ๑๕ ก.ค. ๒๕๖๐
เวลา ๑๗.๑๐

Reference is made to the results of discussion at the recent launching workshop Implementation plan of the Initial Studies Stage-2 held in Bangkok. Implementation of the Initial Studies Stage-2 is being started-up with the list of national, regional and international experts required to provide support of in order to implement the project to comply with the scheduled timeframes for producing expected outputs in line with the IS project document and TD work plan.

In this connection, MRCS would like to kindly request NMCS for identifying potential candidates for the following national expert positions to support the IS-2:

1. National Flood Management Expert (NFE)
2. National Hydrologic/Hydraulic Modelling Expert (NHME)
3. National Agriculture Planning Expert (NAPE)
4. National Socio-economic Planning Expert (NSPE)
5. National Spatial / Land-use Planning Expert (NLUPE)
6. National Transport Planning Expert (NTPE)

เรียน ๐๐.๔๖๑.

พิจารณาดำเนินการต่อไป

13 ก.ค. ๖๐

(นายวรศาสตร์ อภัยพงษ์)
อธิบดีกรมทรัพยากรน้ำ

H.E. Mr. Te Navuth
Secretary General
Cambodia National Mekong Committee
Secretariat
Member of the MRC Joint Committee for
Cambodia

Dr. Inthavy Akkharath
Acting Secretary General
Lao National Mekong Committee
Secretariat
Member of the MRC Joint Committee for
Lao PDR
Chairperson of the MRC Joint Committee
for 2017

เรียน อธิบดี


14 ก.ค. ๖๐

Mr. Worasart Apaipong
Director General of Department of
Water Resources
Ministry of Natural Resources and Environment
Thai National Mekong Committee Secretariat
Member of the MRC Joint Committee for Thailand

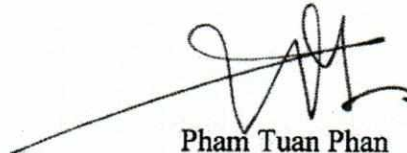
Dr. Le Duc Trung
Director General
Viet Nam National Mekong Committee
Secretariat
Member of the MRC Joint Committee for
Viet Nam

Soft copies of the TORs for the above positions will be sent to focal points. We would highly appreciate it if the NMCS could facilitate the required process and forward the screened CV of the candidates to the MRC Secretariat at your earliest convenience, preferably by 30 July 2017.

Should further enquiries on this matter be needed, kindly contact Mr. Oudomsack Philavong, Technical Coordination Specialist, via email oudomsack@mrcmekong.org.

Thank you very much for your cooperation in this matter. 

Yours sincerely,



Pham Tuan Phan
Chief Executive Officer



Mekong River Commission

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Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
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TERM OF REFERENCE

1. Consultancy Summary:

Title:	Thailand National Flood Management Expert (TNFE)
Consultancy type:	Short term Consultant under SSA
Division:	Technical Support Division (TD)
Duration:	August 2017 – March 2018
Duty station:	Home based and RFMMC
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	Up to 100 working days in total (non-continuously)
Required deliverables for this consultancy:	Sub-report of Task 4, Task 5B, Task 6B and Task 7

2. Background

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the Governments of Cambodia, Lao PDR, Thailand and Viet Nam. In accordance with the Agreement, the Mission of MRC is “to promote and coordinate sustainable management and development of water and related resources for the countries’ mutual benefit and the people’s well-being by implementing strategic programmes and activities and providing scientific information and policy advice.”

FMMP 2011-2015

All MRC Programmes developed their programme documents for the period 2011-2015 in line with the goals of the MRC Strategic Plan for this period. FMMP was one of the twelve MRC programmes and, since 2012, had developed particularly strong ties with the Climate Change and Adaptation Initiative (CCAI), the Information and Knowledge Management Programme (IKMP) and the Basin Development Programme (BDP), while links had become increasingly stronger with the Integrated Capacity Building Programme (ICBP) and the Drought Management Programme (DMP). FMMP was also in close contact with the Mekong Integrated Water Resources Management Project (Mekong-IWRM-P), while interaction with the Navigation Programme (NAP), the Environment Programme (EP), the Agriculture and Irrigation Management Programme (AIP), the Fisheries Programme (FP) and

the Sustainable Hydropower Initiative (ISH) had been more of a more ad-hoc character. The linkages between FMMP and other MRC Programmes were well identified.

Flood Management and Mitigation (FMM) represented one of the MRC priorities, as reflected in the MRC Strategic Plan 2011-2015. The MRC will continue to support the MRC Member Countries in this field of flood management and mitigation through FMMP 2011-2015, which followed on from FMMP 2004-2010. The Programme Document for FMMP 2011-2015 (Volume 1: main report and Volume 2: annexes) was adopted by the 33rd meeting of the MRC Joint Committee on 25-26 March 2011 and served as an important MRC reference document.

FMM Team under MRCS 2016-2020

It was agreed with the MRC Member Countries that with the available means in 2015 the Initial Studies could not be completed. It was agreed that FMMP 2011-2015 would request Development Partners to make “earmarked” funding available to complete the Initial Studies. In January 2016 it became clear that The Government of The Netherlands would be willing to consider additional funding to complete the Initial Studies. A final decision was taken by December 2016.

Since 1st January 2016 the new organizational structure of MRCS has been adopted, merging FMM disciplines into one (Technical Support Division – TD) of the 4 Divisions of the new structure. Key staff of the previous FMMP 2011-2015 have continued in the FMMP/TD Team, while National and International consultants will be contracted to support the FMM/TD Team to undertake the completion of the Initial Studies.

The Initial Studies

An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

- Output 1.2 Demonstration of the formulation of Integrated Flood Risk Management (IFRM) Plans and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change, for the Nam Mae Kok Basin of Thailand and the Xe Bang Fai Basin of Lao PDR.
- Output 2.4 Impact of climate change on short and long-term flood behavior and forecasting and climate change adaptation are systemized in the RFMMC and Member Countries.
- Output 3.2 Demonstration of the formulation of an IFRM Plan and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change and sea level rise, across the trans-boundary floodplains of Cambodia and Viet Nam’s Cuu Long Delta (joint project).

In addition to climate change, upstream developments (dams) and future changes to the Basin’s floodplains will affect flood behavior and flood risk in the Lower Mekong Basin. Future floodplain changes include the development of new infrastructure, increased population, changes to land-use, a higher standard of living, etc. The Initial Studies address the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMPP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

- Task 1 Simulation and assessment of existing flood behavior and possible future flood behavior under climate change across the LMB and in the three FFAs and their hotspots.
- Task 2 Delivery of Pilot Projects to identify and implement non-structural climate change adaptation measures, including indicative IFRM Plans.
- Task 3 Formulation of future floodplain development scenarios, embracing population growth, increase in standard of living, changes to land-use and new floodplain infrastructure developments.
- Task 4 Assessment of possible future flood behavior under conditions of inferred future climate change, future upstream developments (dams) and future floodplain development.
- Task 5 Formulation of existing and future flood damage estimation relationships.
- Task 6 Assessment of existing and future flood event damage and average annual damage.
- Task 7 Delivery of pilot studies to demonstrate the formulation of strategic directions to manage existing, future and residual flood risks in the three FFAs, including indicative IFRM Plans.
- Task 8 Flood mapping to be integrated in Task 1-7 Reports.

3. Objective of the Consultancy:

To provide technical inputs to implement the Task 4, Task 5B, Task 6B and Task 7 of Initial Studies Stage-2.

4. Responsibilities and tasks:

Work Schedule

The proposed work schedule and time allocated to the various tasks, activities and required outputs are indicated below. Reference is made to the Initial Studies project. The Consultant should feel free to make suggestions to amend the framework.

The following points should be noted:

- The Consultant will work and get the guidance from international consultants;
- This consultancy service will be carried out in collaboration and coordination with the Thailand National Mekong Committee.
- TD will engage an *international consultant* to generally analyze and report on the impacts of CC and future USDs and FPDs on future flood behavior in terms of changes to the frequency distributions of flood characteristics (e.g. peak discharges, water levels, etc.).

Details of the documented deliverables by the consultancy by the Thailand National Flood Management Expert (TNFE) are specified below:

The Proposed Project Tasks and Works Allocation for the TNFE are presented in Annex 1.

In relation to **Task 4B**, the TNFE will undertake the following *sub-tasks T4B.2 & T4B.6*. The tasks are indicated (note: only in terms of supervision by the SIFRME) in Annex 1.

Task 4B for TNFE		25 days
T4B.2	Based on the Inception Workshop (IW-1) findings, the TNHME, assisted by the TNFE , to develop and incorporate the schematization of the P-2060-P infrastructure into the hydrodynamic models of the NMK FFA. Process guided by SIHME and SIFRME.	5
T 4B.3	The TNHME, assisted by the TNFE , to analyse the impacts on future flood behaviour (2060) in the NMK FFA of "P-2060-P infrastructure, upstream basin developments and CC". Process guided by SIHME and SIFRME.	5
T4B.4	The TNHME, assisted by the TNFE , to prepare draft report for the NMK FFA, describing model schematization for P-2060-P infrastructure, and the impacts of this infrastructure, upstream basin developments and CC on 2060 flood behavior of the NMK FFA ('Impact on Future Flood Behaviour Report'). If necessary, request the SIHME or TNHME to adjust the model schematization or make additional flood simulation runs. The TNHME send draft report to SIHME for review the draft 'Impact on Future Flood Behaviour Reports'. Process guided by SIHME and SIFRME.	5
T4B.5	The LNHME, assisted by the TNFE , prepare and present in the Task 4 Result Workshops (RW-2) : (i) Develop a ppt-presentations on NMK FFA for RW-2. (ii) Present and discuss the findings and results of the Task 4B draft report concerning the impact of P-2060-P infrastructure, upstream basin developments and CC on future flood behaviour (2060) in the XBF FFA. Based on the findings of the Results Workshop the TNHME & the TNFE will finalize the draft 'Impact on Future Flood Behaviour Report'. Process guided by SIHME and SIFRME.	5
T4B.6	The LNHME, assisted by the TNFE , to prepare a Task 4A sub-report (1) on NMK FFA, and Briefing Notes, as requested. The TNFE to send report to SIFRME for review and recommendations.	5

The Proposed Project Tasks and Works Allocation for the TNFE are presented in Annex 1.

In relation to **Task 5B/B**, the TNFE will undertake the following *sub-tasks T5B/B.1 & T5B/B.4*. The tasks are indicated (note: only in terms of supervision by the SIFDRE) in Annex 1.

Task 5B/B for TNFE		20 days
T5B.1	The TNFE to check and verify the district future damage information for P-2060-P made available by MCs.	5
T5B.2	(i) The TNFE to review Existing flood damage relationships and flood damage estimates for the NMK FFA (Tasks 5A and 6A); (ii) The TNFE to explain assumptions and methodology to be used to create Future (P-2060-P) flood damage relationships and estimates for the NMK FFA and	5

	convert them to 'present day values';	
	(iii) The TNFE to review available future damage information for the NMK FFA, as supplied by MC.	
	(iv) The TNFE to prepare proposed workplan for Tasks 5B/B and 6B/A).	
	(v) The TNFE to develop a ppt-presentation for IW-3 on NMK FFA.	
	The process is guided by the SIFDRE.	
T5B.3	The TNFE to develop the estimation of future flood damage relationships for the land uses and socio-economic development of the NMK FFA under P-2060-P. Process is guided by the SIFDRE.	5
T5B.4	The TNFE to prepare the preparation of draft Task 5B/B sub-report describing the future flood damage relationships for the NMK FFA (' Future Flood Damage Relationship Reports '), including the methodology and underlying assumptions. Process is guided by the SIFDRE.	5

The Proposed Project Tasks and Works Allocation for the TNFE are presented in Annex 1.

In relation to **Task 6B/B**, the TNFE will undertake the following *sub-tasks T6B/B.1 & T6B/B.7*. The tasks are indicated (note: only in terms of supervision by the SIFDRE) in **Annex 2**.

Task 6B/B for TNFE		25 days
T6B.1	The TNFE to interact with the SIFDRE to verify that the 'Impact Assessment Locations' (IALs) used to determine Existing Damages under Task 6A are appropriate for estimating Future Damages under Task 6B. If necessary, request the TNHME provide outputs at revised IALs. The process is guided by the SIFDRE.	2
T6B.2	The TNFE to interact with the SIFDRE to review findings of draft 'Future Flood Damage Relationship Reports' to check that they are appropriate to the assessment of future flood damages in the NMK FFA. If TNFE and SIFDRE agree that these are not appropriate, method of updating will be discussed.	2
T6B.3	The TNFE to use the future flood damage relationships of Task 5B for estimation of future flood damages in the NMK FFA for the various identified simulation scenarios (3 or 4) regarding floodplain development, upstream basin development and CC. The process is guided by the SIFDRE.	3
T6B.4	The TNFE to compare Existing (Task 6A) and Future (Task 6B) damages in the NMK FFA and identify the principal factors associated with increased damages. The process is guided by the SIFDRE.	2
T6B.5	The TNFE to prepare the draft report of NMK FFA, presenting the findings of the Task 6B studies ('Future Flood Damage Reports'). The process is guided by the SIFDRE.	5
T6B.6	The TNFE to prepare the draft NMK FFA findings for the Regional Task 6 Results Workshop (RW-4) :	4

	<ul style="list-style-type: none"> (i) Develop ppt-presentations on NMK FFA; (ii) Present and discuss the findings of the draft 'Future Flood Damage Report'; (iii) Present and discuss the major causative factors increasing future flood damage; (iv) Present and discuss work to be done under Task 7, which will bring together the estimates of existing, future and residual damage. 	
T6B.7	The TNFE to finalize the Task 5B sub-report ('Future Flood Damage Relationships') and the Task 6B sub-report ('Future Flood Damages') for the NMK FFA. The process is guided by the SIFDRE.	7

The Proposed Project Tasks and Works Allocation for the TNFE are presented in Annex 1.

In relation to **Task 7B**, the TNFE will undertake the following *sub-tasks T7B.2 & T7B.6*. The tasks are indicated (note: only in terms of supervision by the SIFRME) in Annex 1.

	Task 7B for TNFE	30 days
T7B.2	<p>The TNFE, assisted by the TNHME, will based on the results of Tasks 1, 4, 6A and 6B, assess existing, future (2060) and residual flood risks in the NMK FFA, including identification of principle causative factors (eg future land-use, future infrastructure, future population growth, etc.).</p> <p>The SIFRME will guide the process.</p>	3
T7B.3	<p>The TNFE, assisted by the TNHME, to prepare the draft Task 7A sub-report for NMK FFA describing the three flood risks in the NMK FFA and their principle causative factors ('Flood Risk Reports').</p> <p>Process guided by the SIFRME.</p>	5
T7B.4	<p>Prepare and present in Task 7B Results 1 Workshops (RW1-6):</p> <p>The TNFE, assisted by the TNHME, to:</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on NMK FFA; (ii) Lead presentation and discussion of the findings of the draft Flood Risk Reports, including causative factors; (iii) Review methodology to identify strategic directions to manage these flood risks and assess their potential effectiveness; (iv) Formulate a 'strategic directions' workplan for the next stage of work; <p>Finalize the draft Task 7B 'Flood Risk sub-report'.</p> <p>The process is guided by the SIFRME.</p>	4
T7B.5	<p>The TNFE, assisted by the TNHME, and National sector experts to (i) identify potentially attractive 'strategic directions' to manage the three flood risks and (ii) assessment of the changes to flood behaviour and flood risk associated with these options, which may involve additional modeling runs and the involvement of TNHME and SIHME and National Sector Experts. Identify and prioritize management options that are worthy of more detailed national, follow-on studies, including elements of the IFRM Planning process.</p>	4

T7B.6	The TNFE , assisted by the TNHME , to prepare a draft Task 7 Report on NMK FFA, describing the nature and effectiveness (potential or as tested in model runs) of promising options ('Strategic Directions to Manage Flood Risk Reports'. The TNFE send the draft 'Strategic Directions to Manage Flood Risks Report' for review and recommendations to the SIFRME.	4
T7B.7	The TNFE , assisted by the TNHME , to prepare and present in the Task 7 Results 2 Workshops (RW2-7) : (i) Develop ppt-presentation on NMK FFA; (ii) Present and discuss the findings of the draft 'Strategic Directions for Flood Risk Management' Reports; (iii) Review and discuss promising options worthy of follow-on studies; (iv) Based on findings of Workshop, the TNFE to finalize the draft 'Strategic Directions to Manage Flood Risks Reports' for NMK FFA.	5
T7B.8	The TNFE , assisted by the TNHME , to complete a draft final Task 7A sub-report (1) on NMK FFA. The TNFE to send the draft final report to the SIFRME for review and recommendations.	5

5. Deliverables and timelines:

It is expected that milestones be used in the assessment of the outputs showing completion of the following tasks:

Task 4B:

- National Inception/Training Workshops (**Task 4 IW-1**);
- Technical Note on analysis of the impacts on future flood behaviour 2060 of "P-2060P infrastructure, upstream basin developments and CC" in NMK FFA;
- Draft report on model schematization for P-2060-P infrastructure and impacts (of this infrastructure, USDs and CC) on 2060 flood behavior;
- Draft final Task 4B sub-report "Impacts of P-2060-P" on "Future Flood Behaviour".

Task 5B/B:

- Ppt-presentation for Inception/Training workshop (**Task 5B IW-3**) on existing flood damage relationship and estimates, and future "P-2060-P flood damage relationship and estimates in NMK FFA;
- Draft Task 5B/B sub-report describing "Future Flood Damage Relationships".

Task 6B/B:

- Draft Task 6B/B sub-report describing "Future Flood Damages" in NMK FFA;
- Draft Task 6B/B sub-report describing "Future Flood Damage Relationships" and "Future Flood Damages" in NMK FFA;
- Ppt-presentation for RW-4 on draft final Task 5B/A and Task 6B/A findings (**Task 5B/6B RW-4**);
- Draft final Task 5B/B and Task 6B/B sub-report on "Future Flood Damages" and "Future Flood Damage Relationships" in NMK FFA.

Task 7B:

- Draft Task 7B sub-report describing “3 types of floods risk” in NMK FFA;
- Ppt-presentation to Task 7B Result Workshop (RW1-6);
- Regional Results-1 Workshop (**Task 7B RW1-6**) on CC simulation of impacts; to describe future flood behaviour under CC, including a supporting ppt presentation;
- Technical Note on potential attractive strategic directions, assessment of changes to flood behavior and flood risk;
- Draft Task 7A sub-report, describing nature and effectiveness of promising options “Strategic Directions for Flood Risk Management”;
- Regional Results-2 Workshop (**Task 7B RW2-7**) on draft broad *strategic directions* for the management of existing, future and residual flood risks in the FFAs and hotspots, including relevant elements for the IFRM planning process, including a supporting ppt presentation.

6. Working Arrangement:

The consultant works under the overall supervision of the Technical Coordination Specialist (TCS) for Initial Studies, and will work closely with the different consultants involved in the Study. Duty station of the consultant is the Office of the Secretariat in Phnom Penh, Cambodia.

7. Qualifications and Requirements:

- A MSc degree in engineering water resources or related field;
- A minimum of 10 years relevant regional working experience in flood management and mitigation, including a minimum of 5 years professional experience;
- Knowledge of the physical characteristics of the Mekong River, and its flood related aspects, and knowledge of institutional arrangements and coordination of the agencies in the lower Mekong Basin;
- Demonstrated experience and knowledge, such as the MRC Toolbox;
- Preferably Knowledge of the Decision Support Software, ISIS input data files, Master Catalogue and QA of local Knowledge Base;
- Good knowledge and experience in hydrological analysis and simulation modelling in the Lower Mekong Basin;
- Ability communicate effectively, verbally and in writing with a wide range of people and to work in a multicultural environment;
- Good verbal and written communication skills, strong organizational and coordination skills;
- Fluency in English both written and spoken.

8. Condition of payment (select below and provide justification for the selection)

- A Service Fee will be paid based on provision of invoices, which will be duly certified by the IS Technical Coordination Specialist (TCS). The service fee will be based on a daily rate which will be negotiated independently by the Finance and Administration Section of MRCS.
- One interim payment will be made after approx. 1 month on submission of the Inception Report on the processing of data/information, model works and duly receipt of the invoice by the TD Director.
- Final payment will be made to the Consultant upon submission of the final report, time record and documented expenses and evaluation form certified by the IS-TCS / TD Director.

9. Intellectual property rights:

Intellectual property rights (IPR): Information, data, database, knowledge resources in the forms of briefings, reports, proceedings, articles, essays, etc. issued by and for the MRCS will be the MRCS property. Any utility, announcement and disclosure that are without MRCS highest levels of authority' permission is considered illegal and will be charged by relevant local and international legal procedures.

10. Signature Block

Director of TD: _____

Date: _____

Incumbent: _____

Date: _____

Annex 1

Proposed Project Tasks and Work Allocation for SIFRME:

Task	SIFRME Work Description Task 4 and Task 7	Allocated Work-Days
Task 4 - Possible impacts on future flood behaviour of floodplain developments, upstream basin developments and CC for SIFRME		
	The SIFRME assisted by the SIHME and RFME to prepare and present <u>one Task 4 Inception Workshop (IW-1)</u> :	
	(i) Develop ppt-presentations (4) and training materials for IW-1;	
	(ii) Present an 'inception' overview of the IS Studies comprising a review of the existing outputs from the IS-1 Studies (Tasks 1, 3, 5A and 5B), a review of the anticipated outputs from the IS-2 Studies (Tasks 4, 5B, 6B and 7), demonstrate how these outputs fit into the IFRM Planning framework;	
T4.1	(iii) Present and discuss proposed objectives and methodologies for Task 4;	-
	(iv) Oversee finalization of the Preferred-2060-Projection of future floodplain developments (P-2060-P) in the XBF sub-basin FFA, the NMK basin FFA, and the CAM-VN TB FFAs and nearby floodplain areas ('the 3 FFAs');	
	(v) Discuss and reach consensus on the determination of the physical parameters of P-2060-P infrastructure needed for schematization and inclusion in the hydro-dynamic models of the 3 FFAs;	
	(vi) Present and discuss proposed Task 4 Workplan;	
	(vi) Prepare a Task 4 Inception Workshop Report (1).	
T4.2	The SIFRME, based on the Inception Workshop findings, to provide guidance to the SIHME/RFME and LNHME/LNFE and TNHME/TNFE in developing and incorporating the schematization of the P-2060-P infrastructure into the hydrodynamic models of the XBF and NMK FFAs, the SIFRME to undertake the same work for CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T 4.3	The SIFRME to review, check and oversee analyses of the impacts on future flood behaviour (2060) in the XBF subbasin and FFA, and NMK basin and FFA of P-2060-P infrastructure, upstream basin developments and CC, and the SIFRME to undertake the same work for CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T4.4	The SIFRME assisted by the SIHME and RFME to review, check and oversee preparation of draft reports (2) describing model schematization for P-2060-P infrastructure, and the impacts of this infrastructure, upstream basin developments and CC on 2060 flood behaviour in the XBF and NMK FFAs ('Impact on Future Flood Behaviour Reports'), and the SIFRME to undertake the same work for the CAM TB	-

	floodplain & VN TB Mekong Delta FFAs. If necessary, request the SIHME, LNHME and TNHME to adjust the model schematization or make additional flood simulation runs. To review the draft 'Impact on Future Flood Behaviour Reports', and the SIFRME to undertake the same work for CAM TB floodplain & VN TB Mekong Delta FFAs.	
	The SIFRME assisted by the SIHME and RFME to prepare and present four Task 4 Result Workshops (RW-2) : (i) Develop a Powerpoint presentations (4) for RW-2. (ii) Present and discuss the findings and results of the Task 4A, 4B and 4C draft reports concerning the impact of P-2060-P infrastructure, upstream basin developments and CC on future flood behaviour (2060) in the 3 FFAs. (iii) Prepare Task 4 Result Workshops Reports (4) Based on the findings of the Results Workshop, supervise finalization of draft 'Impact on Future Flood Behaviour Reports'.	
T4.5		-
	The SIFRME assisted by the SIHME and RFME to prepare a Task 4 Completion Report (1) , and Briefing Notes, as requested. Workshop Reports: 5; Technical Reports (draft and final): 8; Completion Report: 1. PowerPoints: 8	
T4.6		-
Sub-total Task 4 for SIFRME		-
XBF Supervision by SIFRME		
T4A.2	Based on the Inception Workshop (IW-1) findings, the LNHME assisted by the LNFE develop and incorporate the schematization of the P-2060-P infrastructure into the hydrodynamic models of the XBF FFA. Process guided by SIHME and SIFRME.	-
T 4A.3	The LNFE assisted by the LNHME analyse the impacts on future flood behaviour (2060) in the XBF FFA of P-2060-P infrastructure, upstream basin developments and CC. Process guided by SIHME and SIFRME.	-
T4A.4	The LNHME assisted by the LNFE to prepare draft report for the XBF FFA, describing model schematization for P-2060-P infrastructure, and the impacts of this infrastructure, upstream basin developments and CC on 2060 flood behavior of the XBF FFA ('Impact on Future Flood Behaviour Report'). If necessary, request the SIHME or NHMEs to adjust the model schematization or make additional flood simulation runs. The LNHME send draft report to SIHME for review the draft 'Impact on Future Flood Behaviour Reports'. Process guided by SIHME and SIFRME.	-
T4A.5	The LNHME assisted by the LNFE prepare and present in the Task 4 Result Workshops (RW-2) : (i) Develop a ppt-presentations on XBF FFA for RW-2. (ii) Present and discuss the findings and results of the Task 4A draft report concerning the impact of P-2060-P infrastructure, upstream basin developments and CC on future flood behaviour (2060) in the XBF FFA. Based on the findings of the Results Workshop the LNHME	-

	and LNFE will finalize the draft 'Impact on Future Flood Behaviour Report'. Process guided by SIHME and SIFRME.	
T4A.6	The LNFE assisted by the LNHME to prepare a Task 4A sub-report (1) on XBF FFA, and Briefing Notes, as requested. The LNFE to send report to SIFRME for review and recommendations.	-
NMK Supervision by SIFRME		
T4B.2	Based on the Inception Workshop (IW-1) findings, the TNHME assisted by the TNFE to develop and incorporate the schematization of the P-2060-P infrastructure into the hydrodynamic models of the NMK FFA. Process guided by SIHME and SIFRME.	-
T 4B.3	The TNFE assisted by the TNHME to analyse the impacts on future flood behaviour (2060) in the NMK FFA of P-2060-P infrastructure, upstream basin developments and CC. Process guided by SIHME and SIFRME.	-
T4B.4	The TNHME assisted by the TNFE to prepare draft report for the XBF FFA, describing model schematization for P-2060-P infrastructure, and the impacts of this infrastructure, upstream basin developments and CC on 2060 flood behavior of the XBF FFA ('Impact on Future Flood Behaviour Report'). If necessary, request the SIHME or NHMEs to adjust the model schematization or make additional flood simulation runs. The TNHME send draft report to SIHME for review the draft 'Impact on Future Flood Behaviour Reports'. Process guided by SIHME and SIFRME.	-
T4B.5	The TNHME assisted by the TNFE prepare and present in the Task 4 Result Workshops (RW-2) : (i) Develop a ppt-presentations on NMK FFA for RW-2. (ii) Present and discuss the findings and results of the Task 4B draft report concerning the impact of P-2060-P infrastructure, upstream basin developments and CC on future flood behaviour (2060) in the NMK FFA. Based on the findings of the Results Workshop the TNHME and TNFE will finalize the draft 'Impact on Future Flood Behaviour Report'. Process guided by SIHME and SIFRME.	-
T4B.6	The TNFE assisted by the TNHME to prepare a Task 4B sub-report (1) on NMK FFA, and Briefing Notes, as requested. The TNFE to send report to SIFRME for review and recommendations.	-
TB area inputs from SIFRME		
T4C.2	Based on the Inception Workshop (IW-1) findings, the SIFRME assisted by the SIHME and RFME develop and incorporate the schematization of the P-2060-P infrastructure into the hydrodynamic models of the CAN TB floodplain FFA and the VN TB delta FFA.	-
T 4C.3	The SIFRME assisted by the SIHME and RFME to analyse the impacts on future flood behaviour (2060) in the CAM TB floodplain FFA & VN TB delta FFA of P-2060-P	-

	infrastructure, upstream basin developments and CC.	
T4C.4	The SIFRME assisted by the SIHME and RFME to prepare draft report for the CAM TB floodplain & VN TB delta FFAs, describing model schematization for P-2060-P infrastructure, and the impacts of this infrastructure, upstream basin developments and CC on 2060 flood behavior of the CAM TB floodplain & VN TB delta FFAs ('Impact on Future Flood Behaviour Report'). The SIHME will send the CAM TB floodplain FFA report to the CNFE and the VN TB delta FFA to VNFE for review of the report on 'Impact on Future Flood Behaviour Reports'.	-
T4C.5	<p>The SIFRME assisted by the SIHME and RFME prepare and present in the Task 4 Result Workshops (RW-2):</p> <p>(i) Develop a ppt-presentations on CAM TB floodplain FFA & VN TB delta FFA for RW-2.</p> <p>(ii) Present and discuss the findings and results of the Task 4C draft report concerning the impact of P-2060-P infrastructure, upstream basin developments and CC on future flood behaviour (2060) in the CAM TB floodplain FFA & VN TB delta FFA.</p> <p>Based on the findings of the Results Workshop the SIFRME, SIHME and RFME will finalize the draft 'Impact on Future Flood Behaviour Report'.</p>	-
T4C.6	The SIFRME assisted by the SIHME and RFME to prepare a Task 4C sub-reports (2) on NMK FFA, and Briefing Notes, as requested. The SIFRME to send the reports to CNFE for the CAM TB floodplain FFA & to the VNFE for the VN TB Mekong Delta FFA for review and recommendations.	-
Sub-total Task 4 for SIFRME		-

Task 7- Formulation of Strategic Directions to manage Existing, Future and Residual Flood Risks in the 3 FFAs for SIFRME

	The SIFRME assisted by the SIHME and RFME prepare and present one Task 7 Inception Workshop (IW-5) :	
T7.1	<p>(i) Develop ppt-presentations (4) and further training materials as necessary;</p> <p>(ii) Present and discuss the IFRM Planning process and indicate how the various activities and outputs of ISs-1 and ISs-2 fit into this process;</p> <p>(iii) Review the available data and information from Tasks 1 to 6 of ISs-1 and ISs-2 in relation to the assessment of existing, future and residual flood risks in the 3 FFAs;</p> <p>(iv) Present and discuss the proposed methodology to identify 'strategic directions' to manage these flood risks;</p> <p>(iv) Present and discuss the objectives and proposed methodologies of Task 7;</p> <p>(v) Present and discuss proposed workplan for Task 7;</p> <p>(vi) Prepare a Task 7 Inception Workshop Report (1).</p>	-
T7.2	From the results of Tasks 1, 4, 6A and 6B, the SIFRME to supervise assessment by the LNFE/LNHME for the XBF FFA and the TNFE/TNHME for the NMK FFA of existing, future	-

	(2060) and residual flood risks in the three FFAs, including identification of principle causative factors (eg future land-use, future infrastructure, future population growth, etc.), and the SIFRME to undertake the same work for CAM TB floodplain & VN TB Mekong Delta FFAs.	
T7.3	The SIFRME to review, check and oversee preparation of draft reports (2) describing the three flood risks in the XBF FFA and the NMK FFA and their principle causative factors ('Flood Risk Reports'), and the SIFRME to undertake the same work for CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T7.4	<p>The SIFRME to prepare and present four Task 7 Results 1 Workshops (RW1-6):</p> <ul style="list-style-type: none"> (i) Develop PowerPoint Presentations (4); (ii) Lead presentation and discussion of the findings of the draft Flood Risk Reports, including causative factors; (iii) Review methodology to identify strategic directions to manage these flood risks and assess their potential effectiveness; (iv) Formulate a 'strategic directions' workplan for the next stage of work; (v) Prepare Task 7 Results 1 Workshop Reports (4); (vi) Supervise finalization of the draft 'Flood Risk Reports' (4). 	-
T7.5	<p>The SIFRME to supervise (i) identification by the LNFE/LNHME (XBF) and the TNFE/TNHME (NMK), the RFME/SIHME (CAM-VN) and Sector Experts of potentially attractive 'strategic directions' to manage the three flood risks and (ii) assessment of the changes to flood behaviour and flood risk associated with these options, which may involve additional modeling runs and the involvement of the LNFE, the TNFE, the SIHME/RFME, and the Sector Experts. Identify and prioritize management options that are worthy of more detailed national, follow-on studies, including elements of the IFRM Planning process, and to undertake the same for CAM TB floodplain & VN TB Mekong Delta FFAs.</p>	-
T7.6	The SIFRME assisted by the SIHME and RFME to review, check and oversee preparation of draft reports (4) describing the nature and effectiveness (potential or as tested in model runs) of promising options ('Strategic Directions to Manage Flood Risk Reports'. Review draft 'Strategic Directions to Manage Flood Risks Reports'.	-
T7.7	<p>The SIFRME assisted by the SIHME and RFME to prepare and present four Task 7 Results 2 Workshops (RW2-7):</p> <ul style="list-style-type: none"> (i) Develop PowerPoint presentations (4); (ii) Lead presentation and discussion of the findings of the draft 'Strategic Directions for Flood Risk Management' Reports; (iii) Review and discuss promising options worthy of follow-on studies; (iv) Prepare Task 7 Results 2 Workshop Reports (4); (v) Based on findings of Workshop, supervise finalization of 	-

	the draft 'Strategic Directions to Manage Flood Risks Reports'.	
T7.8	<p>The SIFRME assisted by the SIHME and the RFME to prepare a Task 7 Completion Report (1) and Briefing Notes, as requested.</p> <p>Workshop Reports: 9; Technical Reports (draft and final): 16; Completion Report: 1.</p> <p>PowerPoints: 12</p>	-
Sub-total Task 7 for SIFRME		-
XBF supervision by SIFRME		
T7A.2	<p>The LNFE assisted by the LNHME will based on the results of Tasks 1, 4, 6A and 6B, assess existing, future (2060) and residual flood risks in the XBF FFA, including identification of principle causative factors (eg future land-use, future infrastructure, future population growth, etc.).</p> <p>The SIFRME will guide the process.</p>	-
T7A.3	<p>The LNFE assisted by the LNHME to prepare the draft report for XBF FFA describing the three flood risks in the XBF FFA and their principle causative factors ('Flood Risk Reports').</p> <p>Process guided by the SIFRME.</p>	-
T7A.4	<p>Prepare and present in Task 7 Results 1 Workshops (RW1-6):</p> <p>The LNFE assisted by the LNHME to:</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on XBF FFA; (ii) Lead presentation and discussion of the findings of the draft Flood Risk Reports, including causative factors; (iii) Review methodology to identify strategic directions to manage these flood risks and assess their potential effectiveness; (iv) Formulate a 'strategic directions' workplan for the next stage of work; (v) Finalize the draft Task 7 'Flood Risk Report'. <p>The process is guided by the SIFRME.</p>	-
T7A.5	<p>The LNFE assisted by the LNHME and National sector experts to (i) identify potentially attractive 'strategic directions' to manage the three flood risks and (ii) assessment of the changes to flood behaviour and flood risk associated with these options, which may involve additional modeling runs and the involvement of LNHME and SIHME and National Sector Experts. Identify and prioritize management options that are worthy of more detailed national, follow-on studies, including elements of the IFRM Planning process.</p>	-
T7A.6	<p>The LNFE assisted by the LNHME to prepare a draft Task 7 Report on XBF FFA, describing the nature and effectiveness (potential or as tested in model runs) of promising options ('Strategic Directions to Manage Flood Risk Reports'. The LNFE send the draft 'Strategic Directions to Manage Flood Risks Report' for review and recommendations to the SIFRME.</p>	-
T7A.7	<p>The LNFE assisted by the LNHME to prepare and present in the Task 7 Results 2 Workshops (RW2-7):</p>	-

	<ul style="list-style-type: none"> (i) Develop PowerPoint presentation on XBF FFA; (ii) Present and discuss the findings of the draft 'Strategic Directions for Flood Risk Management' Reports; (iii) Review and discuss promising options worthy of follow-on studies; (iv) Based on findings of Workshop, the LNFE to finalize the draft 'Strategic Directions to Manage Flood Risks Reports' for XBF FFA. 	
T7A.8	The LNFE assisted by the LNHME to prepare a draft final Task 7A sub-report (1) on XBF FFA. The LNFE to send the draft final report to the SIFRME for review and recommendations.	-
NMK supervision by SIFRME		
T7B.2	The TNFE assisted by the TNHME will based on the results of Tasks 1, 4, 6A and 6B, assess existing, future (2060) and residual flood risks in the NMK FFA, including identification of principle causative factors (eg future land-use, future infrastructure, future population growth, etc.). Process guided by SIHME and SIFRME.	-
T7B.3	The TNFE assisted by the TNHME to prepare the draft report for NMK FFA describing the three flood risks in the NMK FFA and their principle causative factors ('Flood Risk Reports'). Process guided by the SIFRME.	-
T7B.4	<p>Prepare and present in Task 7 Results 1 Workshops (RW1-6):</p> <p>The TNFE assisted by the TNHME to:</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on NMK FFA; (ii) Lead presentation and discussion of the findings of the draft Flood Risk Reports, including causative factors; (iii) Review methodology to identify strategic directions to manage these flood risks and assess their potential effectiveness; (iv) Formulate a 'strategic directions' workplan for the next stage of work; (v) Finalize the draft Task 7 'Flood Risk Report'. <p>The process is guided by the SIFRME.</p>	-
T7B.5	The TNFE assisted by the TNHME and National sector experts to (i) identify potentially attractive 'strategic directions' to manage the three flood risks and (ii) assessment of the changes to flood behaviour and flood risk associated with these options, which may involve additional modeling runs and the involvement of TNHME and SIHME and National Sector Experts. Identify and prioritize management options that are worthy of more detailed national, follow-on studies , including elements of the IFRM Planning process .	-
T7B.6	The TNFE assisted by the TNHME to prepare a draft Task 7 Report on NMK FFA, describing the nature and effectiveness (potential or as tested in model runs) of promising options ('Strategic Directions to Manage Flood Risk Reports'. The TNFE send the draft 'Strategic Directions to Manage Flood Risks Report' for review and recommendations to the	-

	SIFRME.	
T7B.7	<p>The TNFE assisted by the TNHME to prepare and present in the Task 7 Results 2 Workshops (RW2-7):</p> <ul style="list-style-type: none"> (i) Develop PowerPoint presentation on NMK FFA; (ii) Present and discuss the findings of the draft 'Strategic Directions for Flood Risk Management' Reports; (iii) Review and discuss promising options worthy of follow-on studies; (iv) Based on findings of Workshop, the TNFE to finalize the draft 'Strategic Directions to Manage Flood Risks Reports' for NMK FFA. 	-
T7B.8	<p>The TNFE assisted by the TNHME to prepare a draft final Task 7B sub-report (1) on NMK FFA. The LNFE to send the draft final report to the SIFRME for review and recommendations.</p>	-
	TB area inputs from SIFRME	
T7C.2	<p>The SIFRME assisted by the SIHME and RMFE, based on the results of Tasks 1, 4, 6A and 6B, assess existing, future (2060) and residual flood risks in the CAM TB floodplain FFA & VN TB delta FFA, including identification of principle causative factors (eg future land-use, future infrastructure, future population growth, etc.).</p>	-
T7C.3	<p>The SIFRME assisted by the SIHME and RFME to prepare the draft report for CAM TB floodplain & VN TB delta describing the three flood risks in the CAM TB floodplain & VN TB delta and their principle causative factors ('Flood Risk Reports').</p>	-
T7C.4	<p>Prepare and present in Task 7 Results 1 Workshops (RW1-6):</p> <p>The SIFRME assisted by the SIHME and RFME to:</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on CAM TB floodplain & VN TB delta; (ii) Lead presentation and discussion of the findings of the draft Flood Risk Reports, including causative factors; (iii) Review methodology to identify strategic directions to manage these flood risks and assess their potential effectiveness; (iv) Formulate a 'strategic directions' workplan for the next stage of work; (v) Finalize the draft Task 7 'Flood Risk Report'. <p>Send draft reports to respectively the CNFE for the CAM TB floodplain FFA and the VNFE for the VN TB delta FFA for review and comments.</p>	-
T7C.5	<p>The SIFRME assisted by the SIHME, RFME, CNFE and National CAM Sector Experts, and resp. VNFE and National VN Sector Experts to (i) identify potentially attractive 'strategic directions' to manage the three flood risks and (ii) assessment of the changes to flood behaviour and flood risk associated with these options, which may involve additional modeling runs and the involvement of SIFRME, SIHME, RFME, CNFE and National CAM Sector Experts for the CM TB floodplain FFA, and resp. VNFE and National VN Sector</p>	-

	Experts for the VN TB delta FFA. Identify and prioritize management options that are worthy of more detailed national, follow-on studies , including elements of the IFRM Planning process .	
T7C.6	The SIFRME assisted by the SIHME and RFME to prepare a draft Task 7 Report on CAM TB floodplain FFA & VN TB delta FFA, describing the nature and effectiveness (potential or as tested in model runs) of promising options ('Strategic Directions to Manage Flood Risk Reports'. The SIFRME send the draft 'Strategic Directions to Manage Flood Risks Report' to resp. the CNFE and VNFE for review and recommendations.	-
T7C.7	The SIFRME assisted by the SIHME and RFME to prepare and present in the Task 7 Results 2 Workshops (RW2-7) : (i) Develop PowerPoint presentation on CAM TB floodplain & VN TB delta FFAs; (ii) Present and discuss the findings of the draft 'Strategic Directions for Flood Risk Management' Reports; (iii) Review and discuss promising options worthy of follow-on studies; (iv) Based on findings of Workshop, the SIFRME to finalize the draft 'Strategic Directions to Manage Flood Risks Reports' for CAM TB floodplain & VN TB delta FFAs.	-
T7C.8	The SIFRME assisted by the SIHME and RFME to prepare a draft final Task 7C sub-reports (2) on the CAM TB floodplain & VN TB delta FFAs. The SIFRME to send the draft final reports to the CNFE resp. the VNFE for review and recommendations.	-
Sub-total Task 7 for SIFRME		-
Total Tasks 4 and 7 for SIFRME		-

Annex 2

Proposed Project Tasks and Work Allocation for SIFDRE.

Task	SIFDRE Work Description Task 5B and Task 6B	Allocated Work-Days
Task 5B - Formulation of Future flood damage estimation relationships for SIFDRE		
T5.0	The SIFDRE to liaise with SIFRME and SIHME and SILUPE (MT) to finalize methodology to (i) estimate future flood damage relationships across the 3 FFAs for the Preferred 2060 Projection of floodplain developments (P-2060-P), and (ii) to estimate future flood damage (event-based or as AAD). Specify the nature and format of land-use and other data required from the MCs to estimate future (P-2060-P) flood damage relationships in the 3 FFAs (Task 5B).	-
T5.1	The SIFDRE to check and verify the district future damage information for P-2060-P made available by MCs.	-
The SIFDRE to prepare and present <u>one</u> Regional Task 5B/6B Inception Workshop (IW-3):		
T5.2	(i) PowerPoint Presentations of the XBF FFA, the NMK FFA, the CAM FFA & VN FFA. Review Existing flood damage relationships and flood damage estimates for the 3 FFAs (Tasks 5A and 6A); (ii) Explain assumptions and methodology to be used to create Future (P-206-P) flood damage relationships and estimates for the 3 FFAs and convert them to 'present day values'; (iii) Review available future damage information for the 3 FFAs, as supplied by MCs; (iv) Present and discuss proposed workplan for Tasks 5B and 6B. (v) Prepare a short Task 5B Inception Workshop Report.	-
T5.3	The SIFDRE to supervise the estimation of future flood damage relationships for the land uses and socio-economic development of the XBF FFA and NMK FFAs under P-2060-P, and undertake the same for the the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T5.4	The SIFDRE to supervise the preparation of draft reports from XBF and NMK, and to undertake and prepare the draft reports from CAM TB floodplain and VN TB Mekong Delta FFA describing the future flood damage relationships for the 3 FFAs ('Future Flood Damage Relationship Reports'), including the methodology and underlying assumptions.	-
Sub-total Task 5 for SIFDRE		-
XBF Supervision by SIFDRE		
T5A.1	The LNFE to check and verify the district future damage information for P-2060-P made available by MCs.	-
T5A.2	(i) The LNFE to review Existing flood damage relationships and flood damage estimates for the XBF FFA (Tasks 5A and 6A);	-

	<ul style="list-style-type: none"> (ii) The LNFE to explain assumptions and methodology to be used to create Future (P-2060-P) flood damage relationships and estimates for the XBF FFA and convert them to 'present day values'; (iii) The LNFE to review available future damage information for the XBF FFA, as supplied by MC. (iv) The LNFE to prepare proposed workplan for Tasks 5B and 6B). (v) The LNFE to develop a PowerPoint Presentation for IW-3 on XBF FFA. <p>The process is guided by the SIFDRE.</p>	
T5A.3	The LNFE to develop the estimation of future flood damage relationships for the land uses and socio-economic development of the XBF FFA under P-2060-P. Process is guided by the SIFDRE.	-
T5A.4	The LNFE to prepare the preparation of draft XBF report describing the future flood damage relationships for the XBF FFA ('Future Flood Damage Relationship Reports'), including the methodology and underlying assumptions. Process is guided by the SIFDRE.	-
NMK Supervision by SIFDRE		
T5B.1	The TNFE to check and verify the district future damage information for P-2060-P made available by MCs.	-
T5B.2	<ul style="list-style-type: none"> (i) The TNFE to review Existing flood damage relationships and flood damage estimates for the NMK FFA (Tasks 5A and 6A); (ii) The TNFE to explain assumptions and methodology to be used to create Future (P-206-P) flood damage relationships and estimates for the NMK FFA and convert them to 'present day values'; (iii) The TNFE to review available future damage information for the NMK FFA, as supplied by MC; (iv) The TNFE to prepare proposed workplan for Tasks 5B and 6B. (v) The TNFE to develop a PowerPoint Presentation for IW-3 on NMK FFA. <p>Process is guided by SIFDRE.</p>	-
T5B.3	The TNFE to develop the estimation of future flood damage relationships for the land uses and socio-economic development of the NMK FFA under P-2060-P. Process is guided by SIFDRE.	-
T5B.4	The TNFE to prepare the draft NMK report describing the future flood damage relationships for the NMK FFA ('Future Flood Damage Relationship Reports'), including the methodology and underlying assumptions. Process is guided by SIFDRE.	-
TB Area inputs from SIFDRE		
T5C.1	The RFME to check and verify the district future damage information for P-2060-P made available by MCs.	-
T5C.2	<p>The SIFDRE takes on the following:</p> <ul style="list-style-type: none"> (i) To review Existing flood damage relationships and flood damage estimates for the CAM FFA & VN FFA (Tasks 	-

	5A and 6A);	
	(ii) The explanation of the assumptions and methodology to be used to create Future (P-206-P) flood damage relationships and estimates for the CAM FFA & VN FFA and convert them to 'present day values';	
	(iii) To review available future damage information for the CAM FFA & VN FFA, as supplied by MCs;	
	(iv) The preparation of the proposed workplan for Tasks 5B and 6B in CAM FFA & VN FFA.	
	(v) To develop a PowerPoint Presentation for IW-3 on CAM FFA and VN FFA.	
T5C.3	The SIFDRE to develop the estimation of future flood damage relationships for the land uses and socio-economic development of the CAM FFA & VN FFA under P-2060-P.	-
T5C.4	The SIFDRE to prepare the draft CAM FFA & VN FFA report, describing the future flood damage relationships for the CAM FFA & VN FFA ('Future Flood Damage Relationship Reports'), including the methodology and underlying assumptions. Send the draft report on the CAM FFA to the CNFE and the VN FFA to the VNFE for comments. The SIFDRE to adjust the draft report.	-
Sub-total Task 5 for SIFDRE		
Task 6B - Assessment of Future flood event damage and future AAD for SIFDRE		
T6.1	The SIFDRE to review and verify that the 'Impact Assessment Locations' (IALs) used to determine Existing Damages under Task 6A are appropriate for estimating Future Damages under Task 6B. If necessary, request the hydrodynamic modellers provide outputs at revised IALs.	-
T6.2	The SIFDRE to review the findings of draft 'Future Flood Damage Relationship Reports' to check that they are appropriate to the assessment of future flood damages in the 3 FFAs, updating if necessary.	-
T6.3	The SIFDRE, using the future flood damage relationships of Task 5B, supervise estimation of future flood damages in the 3 FFAs for the various identified simulation scenarios (3 or 4) regarding floodplain development, upstream basin development and CC. (Note: it is yet to be decided whether this is done on a 'simple' specific 'flood event' basis, eg damages associated with the Year 2000 Flood, or on a 'more involved' statistical basis in terms of damages associated with standard frequency floods and AAD).	-
T6.4	The SIFDRE to review, check and oversee the comparison of Existing (Task 6A) and Future (Task 6B) damages in the 3 FFAs and identify the principal factors associated with increased damages.	-
T6.5	The SIFDRE to supervise the draft reports from XBF and NMK, and prepare the draft reports from CAM TB floodplain & VN TB Mekong Delta FFAs, presenting the findings of the Task 6B studies ('Future Flood Damage Reports').	-

	The SIFDRE to prepare and present <u>one</u> Regional Task 6 Results Workshop (RW-4) :	
	(i) Develop ppt-presentations (4);	
	(ii) Present and discuss the findings of the draft 'Future Flood Damage Reports';	
T6.6	(iii) Present and discuss the major causative factors increasing future flood damage;	-
	(iv) Present and discuss work to be done under Task 7, which will bring together the estimates of existing, future and residual damage;	
	(v) Prepare a short Task 6B Workshop Report.	
Task 6.7	The SIFDRE to supervise the finalization of the (4) Task 5B Reports ('Future Flood Damage Relationships') and (4) Task 6B Reports ('Future Flood Damages').	-
Task 6.8	The SIFDRE compile and finalize all sub-reports into one Task 5B Completion Report for 3 FFAs ('Future Flood Damage Relationships') and one Task 6B Completion Report for 3 FFAs Report ('Future Flood Damages').	-
Sub-total Task 6B for SIFDRE		
XBF Supervision by SIFDRE		
T6A.1	The LNFE to interact with the SIFDRE to verify that the 'Impact Assessment Locations' (IALs) used to determine Existing Damages under Task 6A are appropriate for estimating Future Damages under Task 6B. If necessary, request the LNHME provide outputs at revised IALs. The process is guided by the SIFDRE.	-
T6A.2	The LNFE to interact with the SIFDRE to review findings of draft 'Future Flood Damage Relationship Reports' to check that they are appropriate to the assessment of future flood damages in the XBF FFA. If LNFE and SIFDRE agree that these are not appropriate, method of updating will be discussed.	-
T6A.3	The LNFE to use the future flood damage relationships of Task 5B for estimation of future flood damages in the XBF FFA for the various identified simulation scenarios (3 or 4) regarding floodplain development, upstream basin development and CC. The process is guided by the SIFDRE.	-
T6A.4	The LNFE to compare Existing (Task 6A) and Future (Task 6B) damages in the XBF FFA and identify the principal factors associated with increased damages. The process is guided by the SIFDRE.	-
T6A.5	The LNFE to prepare the draft report of XBF FFA, presenting the findings of the Task 6B studies ('Future Flood Damage Reports'). The process is guided by the SIFDRE.	-
T6A.6	The LNFE to prepare the draft XBF FFA findings for the Regional Task 6 Results Workshop (RW-4) : (v) Develop ppt-presentations on XBF FFA; (vi) Present and discuss the findings of the draft 'Future Flood Damage Report'; (vii) Present and discuss the major causative factors increasing future flood damage; (viii) Present and discuss work to be done under Task 7,	-

	which will bring together the estimates of existing, future and residual damage.	
T6A.7	The LNFE to finalize the Task 5B/A sub-report ('Future Flood Damage Relationships') and the Task 6B/A sub-report ('Future Flood Damages') for the XBF FFA. The process is guided by the SIFDRE.	-
NMK Supervision by SIFDRE		
T6B.1	The TNFE to interact with the SIFDRE to verify that the 'Impact Assessment Locations' (IALs) used to determine Existing Damages under Task 6A are appropriate for estimating Future Damages under Task 6B. If necessary, request the TNHME provide outputs at revised IALs. The process is guided by the SIFDRE.	-
T6B.2	The TNFE to interact with the SIFDRE to review findings of draft 'Future Flood Damage Relationship Reports' to check that they are appropriate to the assessment of future flood damages in the NMK FFA. If TNFE and SIFDRE agree that these are not appropriate, method of updating will be discussed.	-
T6B.3	The TNFE to use the future flood damage relationships of Task 5B for estimation of future flood damages in the NMK FFA for the various identified simulation scenarios (3 or 4) regarding floodplain development, upstream basin development and CC. The process is guided by the SIFDRE.	-
T6B.4	The TNFE to compare Existing (Task 6A) and Future (Task 6B) damages in the NMK FFA and identify the principal factors associated with increased damages. The process is guided by the SIFDRE.	-
T6B.5	The TNFE to prepare the draft report of NMK FFA, presenting the findings of the Task 6B studies ('Future Flood Damage Reports'). The process is guided by the SIFDRE.	-
T6B.6	<p>The TNFE to prepare the draft NMK FFA findings for the Regional Task 6 Results Workshop (RW-4):</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on NMK FFA; (ii) Present and discuss the findings of the draft 'Future Flood Damage Report'; (iii) Present and discuss the major causative factors increasing future flood damage; <p>Present and discuss work to be done under Task 7, which will bring together the estimates of existing, future and residual damage.</p>	-
T6B.7	The TNFE to finalize the Task 5B/B sub-report ('Future Flood Damage Relationships') and the Task 6B/B sub-report ('Future Flood Damages') for the NMK FFA. The process is guided by the SIFDRE.	-
TB Area inputs from SIFRE		
T6C.1	The SIFDRE to verify that the 'Impact Assessment Locations' (IALs) used to determine Existing Damages under Task 6A are appropriate for estimating Future Damages under Task 6B. If necessary, request the SIHME/RFME provide outputs at revised IALs.	-

T6C.2	The SIFDRE to review findings of draft 'Future Flood Damage Relationship Reports' to check that they are appropriate to the assessment of future flood damages in the CAM TB floodplain & VN TB Mekong Delta FFAs. The SIFDRE to consider updating.	-
T6C.3	The SIFDRE to use the future flood damage relationships of Task 5B for estimation of future flood damages in the CAM TB floodplain & VN TB Mekong Delta FFAs for the various identified simulation scenarios (3 or 4) regarding floodplain development, upstream basin development and CC.	-
T6C.4	The SIFDRE to compare Existing (Task 6A) and Future (Task 6B) damages in the CAM TB floodplain & VN TB Mekong Delta FFAs and identify the principal factors associated with increased damages.	-
T6C.5	The SIFDRE to prepare the draft report of CAM TB floodplain & VN TB Mekong Delta FFAs, presenting the findings of the Task 6B studies ('Future Flood Damage Reports').	-
T6C.6	<p>The SIFDRE to prepare the draft CAM TB floodplain & VN TB Mekong Delta FFAs findings for the Regional Task 6 Results Workshop (RW-4):</p> <ul style="list-style-type: none"> (i) Develop ppt-presentations on CAM TB floodplain & VN TB Mekong Delta FFAs; (ii) Present and discuss the findings of the draft 'Future Flood Damage Report'; (iii) Present and discuss the major causative factors increasing future flood damage; <p>Present and discuss work to be done under Task 7, which will bring together the estimates of existing, future and residual damage.</p>	-
T6C.7	The SIFDRE to complete the draft CAM TB floodplain FFA & VN TB Mekong Delta 5B report and the 6B report.	-
Sub-total Task 6B for SIFDRE		-
Total Task 5B & 6B for SIFDRE		-



Mekong River Commission

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TERM OF REFERENCE

1. Consultancy Summary:

Title:	Thailand National Hydrologic/Hydraulic Modelling Expert (TNHME)
Consultancy type:	Short term consultant under SSA
Division:	Technical Support Division (TD)
Duration:	6 months period from August - October 2017 and January - March 2018
Duty station:	Home-based
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	Up to 82 working days in total
Required deliverables for this consultancy:	Reports Task 1B and draft sub-reports Task 4B and Task 7B

2. Background

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the Governments of Cambodia, Lao PDR, Thailand and Viet Nam. In accordance with the Agreement, the Mission of MRC is "to promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programmes and activities and providing scientific information and policy advice."

FMMP 2011-2015

All MRC Programmes developed their programme documents for the period 2011-2015 in line with the goals of the MRC Strategic Plan for this period. FMMP was one of the twelve MRC programmes and, since 2012, had developed particularly strong ties with the Climate Change and Adaptation Initiative (CCAI), the Information and Knowledge Management Programme (IKMP) and the Basin Development Programme (BDP), while links had become increasingly stronger with the Integrated Capacity Building Programme (ICBP) and the Drought Management Programme (DMP). FMMP was also in close contact with the

Mekong Integrated Water Resources Management Project (Mekong-IWRM-P) , while interaction with the Navigation Programme (NAP), the Environment Programme (EP), the Agriculture and Irrigation Management Programme (AIP), the Fisheries Programme (FP) and the Sustainable Hydropower Initiative (ISH) had been more of a more ad-hoc character. The linkages between FMMP and other MRC Programmes were well identified.

Flood Management and Mitigation (FMM) represented one of the MRC priorities, as reflected in the MRC Strategic Plan 2011-2015. The MRC will continue to support the MRC Member Countries in this field of flood management and mitigation through FMMP 2011-2015, which followed on from FMMP 2004-2010. The Programme Document for FMMP 2011-2015 (Volume 1: main report and Volume 2: annexes) was adopted by the 33rd meeting of the MRC Joint Committee on 25-26 March 2011 and served as an important MRC reference document.

FMMP Team under MRCS 2016-2020

It was agreed with the MRC Member Countries that with the available means in 2015 the Initial Studies could not be completed. It was agreed that FMMP 2011-2015 would request Development Partners to make “earmarked” funding available to complete the Initial Studies. In January 2016 it became clear that The Government of The Netherlands would be willing to consider additional funding to complete the Initial Studies. A final decision was taken by December 2016.

Since 1st January 2016 the new organizational structure of MRCS has been adopted, merging FMM disciplines into one (Technical Support Division – TD) of the 4 Divisions of the new structure. Key staff of the previous FMMP 2011-2015 have continued in the FMMP/TD Team, while National and International consultants will be contracted to support the FMMP/TD Team to undertake the completion of the Initial Studies.

The Initial Studies

An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

- Output 1.2 Demonstration of the formulation of Integrated Flood Risk Management (IFRM) Plans and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change, for the Nam Mae Kok Basin of Thailand and the Xe Bang Fai Basin of Lao PDR.
- Output 2.4 Impact of climate change on short and long-term flood behavior and forecasting and climate change adaptation are systemized in the RFMMC and Member Countries.
- Output 3.2 Demonstration of the formulation of an IFRM Plan and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change and sea level rise, across the trans-boundary floodplains of Cambodia and Viet Nam’s Cuu Long Delta (joint project).

In addition to climate change, upstream developments (dams) and future changes to the Basin’s floodplains will affect flood behavior and flood risk in the Lower Mekong Basin. Future floodplain changes include the development of new infrastructure, increased

population, changes to land-use, a higher standard of living, etc. The Initial Studies address the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMPP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

- Task 1 Simulation and assessment of existing flood behavior and possible future flood behavior under climate change across the LMB and in the three FFAs and their hotspots.
- Task 2 Delivery of Pilot Projects to identify and implement non-structural climate change adaptation measures, including indicative IFRM Plans.
- Task 3 Formulation of future floodplain development scenarios, embracing population growth, increase in standard of living, changes to land-use and new floodplain infrastructure developments.
- Task 4 Assessment of possible future flood behavior under conditions of inferred future climate change, future upstream developments (dams) and future floodplain development.
- Task 5 Formulation of existing and future flood damage estimation relationships.
- Task 6 Assessment of existing and future flood event damage and average annual damage.
- Task 7 Delivery of pilot studies to demonstrate the formulation of strategic directions to manage existing, future and residual flood risks in the three FFAs, including indicative IFRM Plans.
- Task 8 Flood mapping to be integrated in Task 1-7 Reports.

3. Objective of the Consultancy:

The objectives of this Consultancy are:

- Check and verify SWAT and ISIS model applications for existing situation w/wo CC in the Nam Mae Kok basin under Task 1B; adjust the report where considered necessary.
- Develop under Task 4 in close cooperation with the TNFE the model schematization for the "preferred" floodplain development 2060 of the Nam Mae Kok basin. Present draft sub-reports.
- Calibrate and simulate model SWAT and ISIS applications, based on the "preferred" floodplain development model schematization 2060. Present the draft summary Task 4B Report.
- Provide to the TNFE water levels for Average Return Periods (ARIs) 2, 5, 10, 25, 50 and 100 yrs for the selected Impact Assessment Locations (IALs) for the 2060 FPDs (w/wo CC 2060). Note that for selection of CC scenarios (2060) close coordination with SIHME is required. Provide inputs to the draft summary Task 5B and Task 6B Reports.
- Analyse future flood characteristics and flood map in specific flood focal areas in the NMK floodplains; make a comparison with the baseline situation. Present inputs to sub-report.

- Assess the impact of inferred CC on possible future flood behavior in FIP-2060 assuming the expected FPDs in the Nam Mae Kok basin. Present inputs to sub-report.
- Support the TNFE in developing *promising some relevant FRM measures* and broad *Strategic Directions* for the NMK FFA flood focal area, and *applying the IFRM planning process*. Provide inputs to the draft Task 7B Report.

4. Responsibilities and tasks:

Work Schedule

The proposed work schedule and time allocated to the various tasks, activities and required outputs are indicated below. Reference is made to the Initial Studies project. The Consultant should feel free to make suggestions to amend the framework.

The following points should be noted:

- The Consultant will work and get the guidance from international consultants;
- This consultancy service will be carried out in collaboration and coordination with the Thailand National Mekong Committee.
- TD will engage an *international consultant* to generally analyze and report on the impacts of CC and future USDs and FPDs on future flood behavior in terms of changes to the frequency distributions of flood characteristics (e.g. peak discharges, water levels, etc.).

Details of the documented deliverables by the consultancy by the Thailand National Hydrologic/Hydraulic Modelling Expert (TNHME) are specified below:

The Proposed Project Tasks and Works Allocation for the TNHME are presented in Annex 1. In relation to *Task 1*, the TNHME will undertake the following *sub-tasks T1B.1 & T1B.2*. The tasks are indicated (note: only in terms of supervision by the SIHME) in Annex 1.

NMK TNHME		10 days
T1B.1	The TNHME to check and verify flood simulations, and complete draft report – ‘Simulation of Existing and Future (CC) Daily Flow Behaviour in Nam Mae Kok basin and FFA’.	5
T1B.2	The TNHME to complete Inception Report and Model Calibration report for NMK.	5

The Proposed Project Tasks and Works Allocation for the TNHME are presented in Annex 1. In relation to *Task 4*, the TNHME will undertake the following *sub-tasks T4B.1-T4B.3*. The tasks are indicated (note: only in terms of supervision by the SIHME) in Annex 1.

NMK TNHME		33 days
T4B.1	The TNHME assisted by the TNFE, based on the Task 4 Inception Workshop (IW-1) findings, schematize and incorporate the infrastructure developments associated with P-2060-P floodplain developments into the ISIS model of the NMK sub-basin and FFA. Process is guided by the SIHME.	10
T4B.2	The TNHME assisted by the TNFE to undertake required ISIS model runs (3 or 4) to assess the impacts of future floodplain developments (P-2060-P), upstream basin developments and	15

	CC on future flood behaviour in the NMK basin and FFA. Process is guided by the SIHME.	
T4B.3	The TNHME assisted by the TNFE to prepare a draft Task 4B sub-report – ‘Possible Impacts on Future Flood Behaviour in the NMK FFA’. Process is guided by the SIHME.	8

The Proposed Project Tasks and Works Allocation for the TNHME are presented in Annex 1. In relation to *Task 7*, the TNHME will undertake the following *sub-tasks T7B.1 & T7B.3*. The tasks are indicated (Note: indicated working days are related to supervision by the SIHME) in Annex 1.

	NMK TNHME	39 days
T7B.1	The TNFE & the TNHME, based on the findings of the Task 7 Results 1 Workshop (RW1-6) , identify promising structural measures to manage existing and future flood risks in the NMK FFA. Process is guided by the SIFRME.	12
T7B.2	The TNFE & the TNHME to incorporate promising structural measures in the ISIS model of the NMK sub-basin, and carry out the required model runs to assess the effectiveness of these measures in reducing flood levels/durations in the NMK FFA. Process is guided by the SIFRME.	12
T7B.3	The TNFE assisted by the TNHME to prepare a draft Task 7B sub-report (‘Structural Flood Management Measures for the NMK FFA’) on the nature and effectiveness (impacts on future flood behaviour in the NMK FFA) of promising structural measures. Process is guided by the SIFRME.	15

See for Reference the Annex 1 with the tasks of the SIHME and sub-tasks for NMK FFA (Note: indicated working days are related to supervision by SIHME).

Table 2: Details of Proposed Report by TNHME:

Study Area	Report	Comments
Nam Mae Kok	NMKR-1	<i>Inception Report</i> – Review and Use of Local Models to simulate Future Daily Flow Behaviour in the Nam Mae Kok Basin and its FFA.
	NMKR-2	<i>Calibration report</i> – Calibration of Local SWAT, IQQM and ISIS Models for Nam Mae Kok Basin and FFA.
	NMKR-3	<i>Simulation Report</i> – Simulating Future (CC) Daily Flow Behaviour in the Nam Mae Kok Basin and FFA.

5. Deliverables and timelines:

It is expected that milestones be used in the assessment of the outputs showing completion of the following tasks:

Task 1:

- Draft report – ‘Simulation of Existing and Future (CC) Daily Flow Behaviour in Nam Mae Kok basin and FFA’. Completeness functionality SWAT and ISIS models checked and verified;
- A set of SWAT models and ISIS models ready for application under the existing and future conditions (w/wo CC 2060);
- Inception Report (Future (CC) Daily Flow Behaviour), Model Calibration Report (SWAT, IQQM, ISIS) and Simulation Report (Future (CC) Daily Flow Behaviour) in NMK FFA. Completeness checked and verified.

Task 4:

- Inception/Training Workshops (Task 4 IW-1) to be organized by SIFRME and SIHME for MCs participants and TD Division; presentations to be arranged by SIFRME;
- Accomplished schematization and incorporation of the infrastructure developments associated with “P-2060-P floodplain developments” into the ISIS model of the NMK basin and FFA.
- Draft Task 4B sub-report on ‘Possible Impacts on Future Flood Behaviour in the NMK FFA’.

Task 7:

- Inception/Training Workshops (Task 7 IW-5) to be organized by SIFRME and SIHME for MCs participants and TD Division; presentations to be arranged by SIFRME;
- Accomplished incorporation of “promising structural measures” in the ISIS model of the NMK basin, and do the required model runs to assess the “effectiveness of these measures in reducing flood levels/durations”;
- Contributions to Regional Results-1 Workshop Task 7B (RW1-6) on CC Simulation/Impacts to describe the simulation of future flood behaviour under CC, including a supporting ppt presentation.
- Contributions to Regional Results-2 Workshop Task 7B (RW2-7) on draft strategic directions for the management of existing, future and residual flood risks in the NMK FFA, including a supporting ppt presentation.
- A draft Task 7B sub-report on “Structural Flood Management Measures for the NMK FFA” on the nature and effectiveness (impacts on future flood behaviour in the NMK FFA) of promising structural measures.

Note: Close cooperation between the TNHME and the TNFE is required.

6. Working Arrangement:

The following working arrangements are proposed:

- The IS Technical Coordination Specialist (TCS) is supervisor for the tasks to be implemented;

- The IS TCS and the TD Director are responsible for the implementation of the project, supported by the International Technical Advisor (ITA) and other MRC staff and IS consultants.
- The consultant work will be coordinated, technically managed and supervised by the TCS supported by the ITA, SIHMC and SIFME, in close coordination with TNMC, and under the overall responsibility of the TD Director.
- The Consultant will send the Task 1B, Task 4B, Tasks 5B/B, 6B/B and Task 7B Reports to Thai National Mekong Committee, however the draft report will be discussed and technically accepted by the "Key Group" and the TD Director.
- Close guidance will be given by the TD Division, TCS and ITA.

7. Qualifications and Requirements:

Specific Qualifications:

- Demonstrated experience and knowledge of Decision Support Software such as the MRC Toolbox;
- Good knowledge and experience in hydrological analysis and providing modelling support for Basin-wide Modelling, including gap filling techniques;
- Preferably Knowledge of the ISIS input data files, Master Catalogue and QA of local Knowledge Base;
- Experience in the Mekong region and familiarity with the LMB and Mekong River Commission is an asset;
- Ability communicate effectively, verbally and in writing with a wide range of people and to work in a multicultural environment;
- Excellent written and oral communication skills in English.

8. Condition of payment (select below and provide justification for the selection)

- Daily subsistence allowance will be paid for travel days and time in according to normal MRC rules and regulations.
- Airfares will be reimbursed based on provision of original receipts. Other incidental expenses (visas, taxis to and from airports) will be paid based on provision of receipts.
- A Service Fee will be paid based on provision of invoices, which will be duly certified by the IS Technical Coordination Specialist (TCS). The service fee will be based on a daily rate which will be negotiated independently by the Finance and Administration Section of MRCS.
- One interim payment will be made after approx. 1 month on submission of the Inception Report on the processing of data/information, model works and duly receipt of the invoice by the TD Director.
- Final payment will be made to the Consultant upon submission of the final report, time record and documented expenses and evaluation form certified by the IS-TCS / TD Director.
- Any payment related to this TOR will need the explicit IS-TCS management approval. Approval is based on the IS-TCS verification and acceptance by the TD Director.

9. Intellectual property rights:

Intellectual property rights (IPR): Information, data, database, knowledge resources in the forms of briefings, reports, proceedings, articles, essays, etc. issued by and for the MRCS will be the MRCS property. Any utility, announcement and disclosure that are without MRCS highest levels of authority' permission is considered illegal and will be charged by relevant local and international legal procedures.

10. Signature Block

Director of TD: _____

Date: _____

Incumbent: _____

Date: _____

ANNEX 1

Proposed Project Tasks and Work Allocation for SIHME.

Task	SIHME Work Description Task 1, Task 4 and Task 7	Allocated Work-Days for SIHME
Task 1 - Existing and Future Flood Behaviour (CC Only) for SIHME		
T1.1	The SIHME to revise Task 1 with sub-reports Task 1A (XBF), Task 1B (NMK) and Task 1C (CAM-VN) as required.	-
T1.2	The SIHME to complete Inception Reports (XBF, NMK, CAM-VN) and Model Calibration reports for each FFA.	-
Sub-total SIHME Task 1		
XBF	Supervision by SIHME	
T1A.1	The LNHME to check and verify flood simulations, and complete draft report – ‘Simulation of Existing and Future (CC) Daily Flow Behaviour in Xe Bang Fai sub-basin and FFA’.	-
T1A.2	The LNHME to complete Inception Report and Model Calibration report for XBF.	-
NMK	Supervision by SIHME	
T1B.1	The TNHME to check and verify flood simulations, and complete draft report – ‘Simulation of Existing and Future (CC) Daily Flow Behaviour in Nam Mae Kok basin and FFA’.	-
T1B.2	The TNHME to complete Inception Report and Model Calibration report for NMK.	-
TB area input from SIHME		
T1C.1	The SIHME to check and verify flood simulations, and complete draft report – ‘Simulation of Existing and Future (CC) Daily Flow Behaviour in TB FFAs of the CAM Floodplains and VN Mekong Delta.	-
T1C.2	The SIHME to complete Inception Report and Model Calibration report for the TB FFAs of the CAM Floodplains and VN Mekong Delta.	-
Sub-total SIHME Task 1		
Task 4 - Possible impacts of floodplain developments, upstream basin developments and CC on future flood behaviour for SIHME		
T4.0	The SIHME (and in conjunction with the SIFRME and RFME), review the appropriateness of ‘Impact Assessment Locations’ (IALs) of the 3 FFAs where future flood behaviour is to be reported and the format of this information.	-
T4.1	The SIHME assisted by the RFME, based on the Task 4 Inception Workshop (IW-1) findings, review, check and oversee the schematization and incorporate the infrastructure developments associated with P-2060-P floodplain developments into the ISIS model of the XBF subbasin and FFA and the NMK basin and FFA, and the SIHME to	-

	undertake the same work for the CAM TB floodplain & VN TB Mekong Delta FFAs.	
T4.2	The SIHME assisted by the RFME to review, check and oversee the required ISIS model runs (3 or 4) to assess the impacts of future floodplain developments (P-2060-P), upstream basin developments and CC on future flood behaviour' in the XBF FFA and the NMK FFA, and the SIHME to undertake the same work for the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T4.3	The SIHME assisted by the RFME to supervise the preparations of draft reports (4) 'Possible Impacts on Future Flood Behaviour' in the XBF FFA and the NMK FFA and the SIHME to undertake the same work for the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
Sub-total SIHME Task 4		-
XBF Supervision by SIHME		
T4A.1	The LNHME assisted by the LNFE, based on the Task 4 Inception Workshop (IW-1) findings, schematize and incorporate the infrastructure developments associated with P-2060-P floodplain developments into the ISIS model of the XBF sub-basin and FFA. Process is guided by the SIHME.	-
T4A.2	The LNHME assisted by the LNFE to undertake the required ISIS model runs (3 or 4) to assess the impacts of future floodplain developments (P-2060-P), upstream basin developments and CC on future flood behaviour in the XBF FFA. Process is guided by the SIHME.	-
T4A.3	The LNHME assisted by the LNFE to prepare a draft report – 'Possible Impacts on Future Flood Behaviour in the XBF FFA'. Process is guided by the SIHME.	-
NMK Supervision by SIHME		
T4B.1	The TNHME assisted by the TNFE, based on the Task 4 Inception Workshop (IW-1) findings, schematize and incorporate the infrastructure developments associated with P-2060-P floodplain developments into the ISIS model of the NMK sub-basin and FFA. Process is guided by the SIHME.	-
T4B.2	The TNHME assisted by the TNFE to undertake required ISIS model runs (3 or 4) to assess the impacts of future floodplain developments (P-2060-P), upstream basin developments and CC on future flood behaviour in the NMK basin and FFA. Process is guided by the SIHME.	-
T4B.3	The TNHME assisted by the TNFE to prepare a draft report – 'Possible Impacts on Future Flood Behaviour in the NMK FFA'. Process is guided by the SIHME.	-
TB area inputs from SIHME		
T4C.1	The SIHME assisted by the RFME, based on the Task 4 Inception Workshop (IW-1) findings, schematize and	-

	incorporate the infrastructure developments associated with P-2060-P floodplain developments into the ISIS model of the combined TB FFAs of the CAM Floodplains and VN Mekong Delta.	
T4C.2	The SIHME assisted by the RFME to undertake the required ISIS model runs (3 or 4) to assess the impacts of future floodplain developments (P-2060-P), upstream basin developments and CC on future flood behaviour in the combined TB FFAs of the CAM Floodplains and VN Mekong Delta.	-
T4C.3	The SIHME assisted by the RFME to prepare a draft report – ‘Possible Impacts on Future Flood Behaviour in the combined TB FFAs of the CAM Floodplains and VN Mekong Delta’	-
Sub-total SIHME Task 4		-

Task 7- Formulation of Strategic Directions to manage Existing, Future and Residual Flood Risks in FFAs for SIHME

T7.1	The SIHME supported by the RFME, based on the findings of the Task 7 Results 1 Workshop (RW1-6) , to assist the LNHME/LNFE and the TNHME/TNFE to identify promising structural measures to manage existing and future flood risks in the XBF FFA and in the NMK FFA, and the SIHME to undertake the same work for the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T7.2	The SIHME assisted by the RFME to oversee and assist the LNHME/LNFE and the TNHME/TNFE to incorporate promising structural measures in the ISIS model of the XBF sub-basin and of the NMK basin, and oversee the required model runs to assess the effectiveness of these measures in reducing flood levels/durations in the XBF FFA and the NMK FFA, and the SIHME to undertake the same work for the for the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
T7.3	The SIHME assisted by the RFME to supervise the preparation of the draft reports (2) (‘Structural Flood Management Measures for the XBF FFA and the NMK FFA’) on the nature and effectiveness (impacts on future flood behaviour in the XBF FFA and the NMK FFA) of promising structural measures, and the SIHME to undertake the same work for the CAM TB floodplain & VN TB Mekong Delta FFAs.	-
Sub-total SIHME Task 7		-
XBF Supervision by SIHME		
T7A.1	The LNFE & the LNHME, based on the findings of the Task 7 Results 1 Workshop (RW1-6) , identify promising structural measures to manage existing and future flood risks in the XBF FFA. Process is guided by the SIFRME.	-
T7A.2	The LNFE & the LNHME to incorporate promising structural measures in the ISIS model of the XBF sub-basin, and oversee the required model runs to assess the effectiveness of these measures in reducing flood	-

	levels/durations in the XBF FFA. Process is guided by the SIFRME.	
T7A.3	The LNFE & the LNHME to prepare a draft report ('Structural Flood Management Measures for the XBF FFA') on the nature and effectiveness (impacts on future flood behaviour in the XBF FFA) of promising structural measures. Process is guided by the SIFRME.	-
NMK Supervision by SIHME		
T7B.1	The TNFE & the TNHME, based on the findings of the Task 7 Results 1 Workshop (RW1-6), identify promising structural measures to manage existing and future flood risks in the NMK FFA. Process is guided by the SIFRME.	-
T7B.2	The TNFE & the TNHME to incorporate promising structural measures in the ISIS model of the NMK sub-basin, and oversee the required model runs to assess the effectiveness of these measures in reducing flood levels/durations in the NMK FFA. Process is guided by the SIFRME.	-
T7B.3	The TNFE & the TNHME to prepare a draft report ('Structural Flood Management Measures for the NMK FFA') on the nature and effectiveness (impacts on future flood behaviour in the NMK FFA) of promising structural measures. Process is guided by the SIFRME.	-
TB area inputs from SIHME		
T7C.1	The SIHME assisted by the RFME, based on the findings of the Task 7 Results 1 Workshop (RW1-6) , identify promising structural measures to manage existing and future flood risks in the combined TB FFAs of the CAM Floodplains and VN Mekong Delta. Results to be reviewed by the CNFE for the CAM TB floodplain FFA and the VNFE for the VN TB Mekong Delta FFA. Process is guided by the SIFRME.	-
T7C.2	The SIHME assisted by the RFME to incorporate promising structural measures in the ISIS model of the combined TB FFAs of the CAM Floodplains and VN Mekong Delta and undertake the required model runs to assess the effectiveness of these measures the combined TB FFAs of the CAM Floodplains and VN Mekong Delta. The SIHME to send to CNFE and VNFE for review and recommendations on CAM TB floodplain FFA & VN TB Mekong Delta FFA. Process is guided by the SIFRME.	-
T7C.3	The SIHME assisted by the RFME to prepare a draft report ('Structural Flood Management Measures for the TB FFAs') on the nature and effectiveness (impacts on future flood behaviour) in the combined TB FFAs of the CAM Floodplains and VN Mekong Delta of promising structural measures. The SIHME to send to CNFE and VNFE for review and recommendations on CAM TB floodplain FFA & VN TB Mekong Delta FFA. Process is guided by the SIFRME.	-

Sub-total SIHME Task 7	-
Total SIHME Task 7	-



Mekong River Commission

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TERM OF REFERENCE

1. Consultancy Summary:

Title:	National Agriculture Planning Expert (Thailand)
Consultancy type:	Short term Consultant under SSA
Division:	Technical Support Division (TD)
Duration:	August-September 2017
Duty station:	Home based and RFMMC
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	A maximum of 10 working days
Required deliverables for this consultancy:	National sector report

2. Background

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the Governments of Cambodia, Lao PDR, Thailand and Viet Nam. In accordance with the Agreement, the Mission of MRC is "to promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programmes and activities and providing scientific information and policy advice."

FMMP 2011-2015

All MRC Programmes developed their programme documents for the period 2011-2015 in line with the goals of the MRC Strategic Plan for this period. FMMP was one of the twelve MRC programmes and, since 2012, had developed particularly strong ties with the Climate Change and Adaptation Initiative (CCAI), the Information and Knowledge Management Programme (IKMP) and the Basin Development Programme (BDP), while links had become increasingly stronger with the Integrated Capacity Building Programme (ICBP) and the Drought Management Programme (DMP). FMMP was also in close contact with the Mekong Integrated Water Resources Management Project (Mekong-IWRM-P), while interaction with the Navigation Programme (NAP), the Environment Programme (EP), the Agriculture and Irrigation Management Programme (AIP), the Fisheries Programme (FP) and

the Sustainable Hydropower Initiative (ISH) had been more of a more ad-hoc character. The linkages between FMMP and other MRC Programmes were well identified.

Flood Management and Mitigation (FMM) represented one of the MRC priorities, as reflected in the MRC Strategic Plan 2011-2015. The MRC will continue to support the MRC Member Countries in this field of flood management and mitigation through FMMP 2011-2015, which followed on from FMMP 2004-2010. The Programme Document for FMMP 2011-2015 (Volume 1: main report and Volume 2: annexes) was adopted by the 33rd meeting of the MRC Joint Committee on 25-26 March 2011 and served as an important MRC reference document.

FMMP Team under MRCS 2016-2020

It was agreed with the MRC Member Countries that with the available means in 2015 the Initial Studies could not be completed. It was agreed that FMMP 2011-2015 would request Development Partners to make “earmarked” funding available to complete the Initial Studies. In January 2016 it became clear that The Government of The Netherlands would be willing to consider additional funding to complete the Initial Studies. A final decision was taken by December 2016.

Since 1st January 2016 the new organizational structure of MRCS has been adopted, merging FMM disciplines into one (Technical Support Division – TD) of the 4 Divisions of the new structure. Key staff of the previous FMMP 2011-2015 have continued in the FMMP/TD Team, while National and International consultants will be contracted to support the FMMP/TD Team to undertake the completion of the Initial Studies.

The Initial Studies

An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

- Output 1.2 Demonstration of the formulation of Integrated Flood Risk Management (IFRM) Plans and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change, for the Nam Mae Kok Basin of Thailand and the Xe Bang Fai Basin of Lao PDR.
- Output 2.4 Impact of climate change on short and long-term flood behavior and forecasting and climate change adaptation are systemized in the RFMMC and Member Countries.
- Output 3.2 Demonstration of the formulation of an IFRM Plan and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change and sea level rise, across the trans-boundary floodplains of Cambodia and Viet Nam’s Cuu Long Delta (joint project).

In addition to climate change, upstream developments (dams) and future changes to the Basin’s floodplains will affect flood behavior and flood risk in the Lower Mekong Basin. Future floodplain changes include the development of new infrastructure, increased population, changes to land-use, a higher standard of living, etc. The Initial Studies address the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMPP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

- Task 1 Simulation and assessment of existing flood behavior and possible future flood behavior under climate change across the LMB and in the three FFAs and their hotspots.
- Task 2 Delivery of Pilot Projects to identify and implement non-structural climate change adaptation measures, including relevant constructive FRM measures.
- Task 3 Formulation of future floodplain development scenarios, embracing population growth, increase in standard of living, changes to land-use and new floodplain infrastructure developments.
- Task 4 Assessment of possible future flood behavior under conditions of inferred future climate change, future upstream developments (dams) and future floodplain development.
- Task 5 Formulation of existing and future flood damage estimation relationships.
- Task 6 Assessment of existing and future flood event damage and average annual damage.
- Task 7 Demonstrate the formulation of strategic directions to manage existing, future and residual flood risks in the three FFAs, as part of the IFRM Planning Process.
- Task 8 Flood mapping to be integrated in Task 1-7 Reports.

3. Objective of the Consultancy:

To provide technical inputs to implement the Task 4 of Initial Studies Stage-2.

4. Responsibilities and tasks:

Under **Task 3** four different floodplain development scenarios were developed, but there was insufficient time to select the preferred scenario and to bring those to a common direction and understanding of the effects for the LMB development.

The main objective of **Task 4** of ISs-2 is to define and 'size' the physical infrastructure across the floodplain in 2060 in accordance with the "preferred" floodplain development scenario" (PFDS), and to assess the impact of this infrastructure on flood behavior. This infrastructure includes the roads and road system, including railroads, ring roads, flood free areas, partially flood free areas, dikes, dams/reservoirs, irrigation and drainage infrastructure, flood protection infrastructure, and their dimensions relevant for future flood behavior and damage.

The floodplain development scenario will take into account major factors that affect future flood behavior and damage in the Nam Mae Kok basin floodplain and FFA in Thailand, which are:

1. Population growth and urbanization patterns – increase in population exposed to flood risk;
2. Land-use changes and patterns – different land uses will change water use & vulnerabilities as well as land use values impacting on the, flood damage and risks;
3. Economic growth and increased standard of living – increases unit flood damage and risk
4. Trends and policies for development and change of economic structure (agriculture-services-industries);

5. Developments of infrastructure to accommodate and facilitate land use changes and economic structure developments – can interfere with flood flows and exacerbate flood behavior, damage and risk.

Under **Task 5B** future flood damage estimation relationships, relevant to PFDS will be developed. Crucial inputs to Task 5B include future population, future land-use, and future standard of living,

In 2015 under Task 3 four different scenarios had been developed, but there was insufficient time to select the preferred scenario and to bring those to a common direction and understanding of the effects for the LMB development.

5. Deliverables and timelines:

The following outputs are required from the National Agriculture/Irrigation Planning Expert (National Consultant):

a) Sectoral contributions

Sectoral reviews have been prepared in the initial stage of **Task 3** development. Sectoral contributions need to focus on:

- A visualization of the physical irrigation and drainage infrastructure 2060 in the floodplain/ but particularly in the Flood Focal Area (FFA) that will be added to the baseline situation (2014) as much as possible detailed in parameters relevant for flood behaviour and damage (**Task 4**).

See Annex 1 for detailed sectoral contributions, and Annex 2 for background information.

b) Participation in workshops

A series of two Regional Workshops is planned:

- First ISS-2 Inception Workshop (Task 4 - IW-1; two/three days, tentatively scheduled in the 3rd and 4th week of August in Phnom Penh, Cambodia) – inputs are required from national Sector Experts identifying the additional physical infrastructure (ref. baseline 2014) of the preferred 2060 scenario with focus on parameters relevant for flood behavior and damage.

During these workshop an active participation from the National Sector Experts (National Consultants) is expected to deepen the specification of the 2060 scenario, to review and comment on draft proposals, and to contribute concrete inputs for the detailing physical infrastructure, expected to be in place by 2060, and that is relevant for flood behavior and damage.

6. Working Arrangement:

The consultant works under the overall supervision of the Technical Coordination Specialist (TCS) for Initial Studies, and will work closely with the different consultants involved in the Study. Duty station of the consultant is the Office of the Secretariat in Phnom Penh, Cambodia.

7. Qualifications and Requirements:

The following qualifications are required for the position of a Socio-economic Planning Expert from Thailand:

- a. The applicant must have a MSc. or PhD. Level university degree in Agriculture Planning or equivalent;
- b. The applicant must have access to relevant information and datasets such as Ministries, Statistics Bureau, Masterplans, Line Agencies and other Senior Experts;
- c. The applicant must have substantial experience (5-10 years) working with and for Government agencies; and
- d. It would be considered an advantage if the applicant has previously worked for the Mekong River Commission.

8. Condition of payment (select below and provide justification for the selection)

In consideration for at least two key milestones/outputs: after the completion of the regional technical meeting (see proposed working schedules in the section 6 above) and upon approval of the report from the TD, the MRC shall pay the consultant for the following amounts:

MILESTONE	AMOUNT	TARGET DATE
Upon completion of the report and approval by the TD (100%)		September 2017

9. Intellectual property rights:

Intellectual property rights (IPR): Information, data, database, knowledge resources in the forms of briefings, reports, proceedings, articles, essays, etc. issued by and for the MRCS will be the MRCS property. Any utility, announcement and disclosure that are without MRCS highest levels of authority' permission is considered illegal and will be charged by relevant local and international legal procedures.

10. Signature Block

Director of TD: _____

Date: _____

Incumbent: _____

Date: _____

Annex 1

Scope of sectoral reviews

Table of contents

1. Introduction

- Brief description and summary of the sector development plans.

2. Review of Sector Development Plans

- Comprehensive data overviews through inclusion of maps, chart & figures, and tables – each presented with clear data sources through the following:
 - 1) An updated inventory of master plans/programs/policies affecting the development of the sector in the floodplain / Flood Focal Area over the next decades – with clear indication of status. (include in annex) and the visualization of these in as much detail as possible;
 - 2) An updated matrix overview of the sector development plans for the floodplains as per master plan: (e.g. irrigation scheme X in 2020, etc) and the visualization of these in as much detail as possible;
 - 3) An updated assessment and review in words (and where possible in maps and figures) of the sector development in the floodplain / Flood Focal Area for the next decades as projected by programs/policies reviewed and the visualization of these in in as much detail as possible;
 - 4) Updated overview & summary of available sector development projections (national & floodplain level) as available from international and regional sector studies/programs (UN, WB/ADB, ASEAN) and the visualization of these in as much detail as possible.

Sectors to be covered

From the National Agriculture/Irrigation Planning Expert the following information related to the floodplain of the Nam Mae Kok basin floodplain and FFA in Thailand is expected:

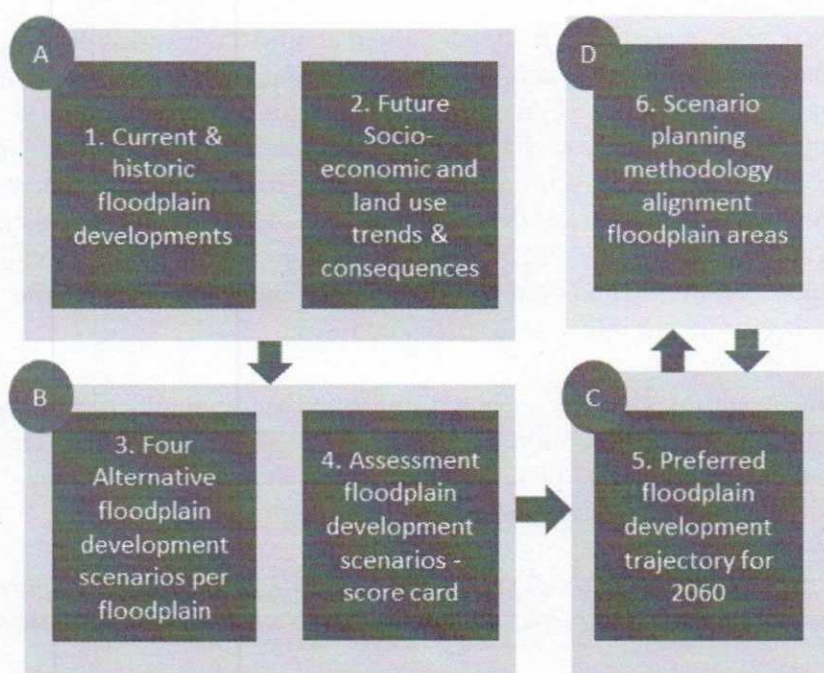
Category	Sub Category	Information needed	Data source
Agriculture	Major crops	<ul style="list-style-type: none">• Production;• Location;• Spatial lay-out;• Maps or descriptions of major agricultural trends.	<ul style="list-style-type: none">• Ministry of Agriculture
	Productivity	<ul style="list-style-type: none">• % per major category;• time series	<ul style="list-style-type: none">• Ministry of Agriculture,• baseline studies
Irrigation	Irrigation schemes	<ul style="list-style-type: none">• Surface (ha);• Location and Layout;• Water demand and source;• Location and size of main delivery canals.	<ul style="list-style-type: none">• Ministry of Agriculture

Annex 2

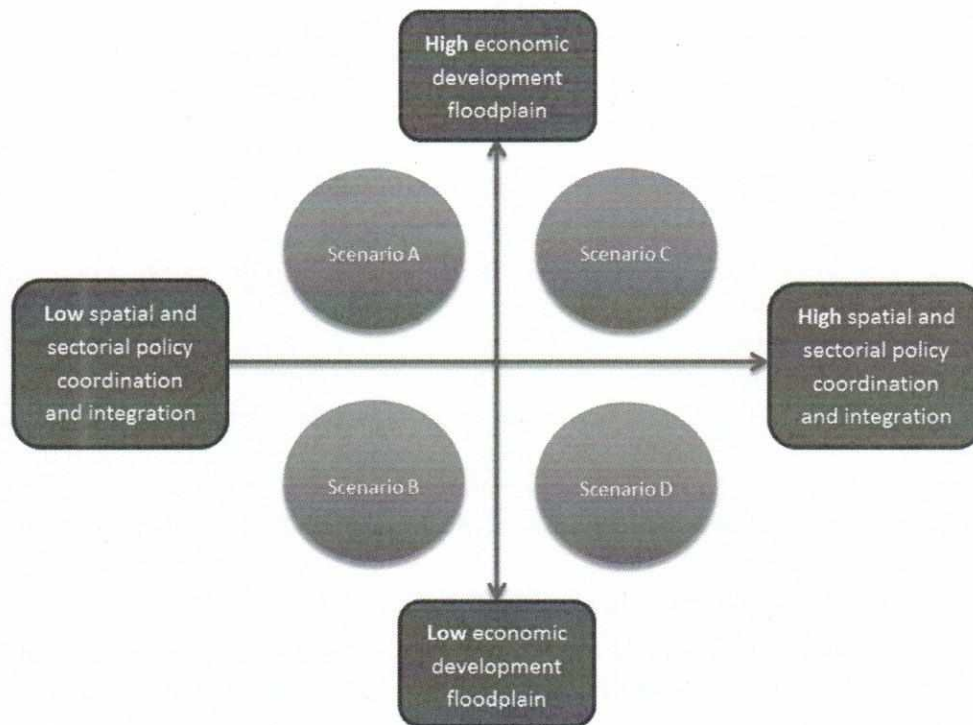
Background of Approach and Methodology

Scenarios are plausible and consistent stories of possible future developments, based on the most relevant and uncertain changes. Scenarios are not forecasts or predictions, rather they are plausible storylines based on a ‘what if’ principle. Under **Task 3** floodplain development scenarios have been developed to assess the impact of different outcomes on future flood behavior, damage and risk and the performance of possible adaptation options to climate change and upstream developments. Secondly, a *preferred* or *desired* spatial floodplain development trajectory for 2060 would be developed, which represents the ‘resultant’ of the (uncertain) economic development scenarios, hydrological (including upstream) impacts and developments and spatial development. The selection of the “*preferred special floodplain development trajectory*” is a remaining activity to complete **Task 3**.

The scenarios were developed using following process structure. The analysis was based on information from baseline and sectorial studies and from (expert) input from the different workshops:



- A. Description of the current floodplain developments and future trends. Synthesis is based on regional and national sectorial studies and baseline reports, to be delivered by national consultants. This step was completed.
- B. Development of four alternative future floodplain development scenarios based on land use patterns and trend analysis and assessment of the implications per scenario. First, the main uncertainties were tackled; in analogy with the Mekong Delta Plan 2100 (MDP) scenarios two major uncertainties were used on the axes of scenarios: for the MDP this included economic development (high and low) on y-axis; and spatial and sectoral policy coordination and integration (high and low) on the x-axis (see figure below).



- C. These four scenarios were then offset and valued against the various established climate change (impact) scenarios (high and low) for the region, as these represent country and basin exogenous uncertainties. Economic growth, spatial and sector coordination are seen hereby as key drivers of land use change and hydraulic infrastructure developments that will influence the floodplains of the LMB by shaping irrigation developments, urbanization patterns, hydropower developments etc. These developments have been abstracted from existing policy and master plan documents for the floodplains, and reviewed against economic and demographic development forecasts for the regions, as well as cross-sectorial and integrative spatial cohesion.

The different scenarios enabled a 'better informed' assessment of different adaptation options and/or identify new options and strategies. These could also create a sense of urgency to alter development plans and policies when valued against climate change impact and/or economic development and policy integration.

- D. *Selection of preferred floodplain development trajectory for 2060. This part was discussed but not entirely completed under **Task 3** for all future floodplain scenarios under ISS-1.*

Therefore, the initial input required for the **Task 4** is to assess the different impacts of the future floodplain scenarios, taking into account the uncertainties of economic growth and climate, and *propose a preferred spatial floodplain development pathway or trajectory, which will be used to evaluate the impacts on flood behavior, risk and flood damages.*

Visualizing the interactions between economic developments, land-use patterns and water and land-use policies, as well as the causal factors that explain the push-pull relationships between them, will provide decision makers with information they need to evaluate the consequences of potential actions.

The original developed scenarios will be used for a sensitivity analysis to assess the robustness of proposed measures.

Note: In order to avoid confusion on the terminology, an explicit choice has been made to use 'scenarios' for the future developments that are uncertain and difficult to influence and 'trajectory or pathway' for the preferred developments, that need certain policy interactions and directions, and which are subject to various uncertainties.

Alignment of the scenario planning methodology of the floodplain areas:

A complicating factor here is the comparison of inter-related development pathways across the four floodplains: as upstream irrigation/hydropower developments will influence downstream floodplains, the pathways need to be established for the four floodplains as a whole. The implication hereof is, that the pathway with optimal conditions (a certain spatial economic development with high integration) may lead to spatially optimized developments across the four floodplains (e.g. irrigation in floodplain A, and fisheries and water retention in floodplain B), that may not be optimal or desirable with political boundaries and national priorities.

- E. The aim in the next step under Task 4 is to visualize and refurbish the floodplains areas with the physical infrastructure that will be installed between the baseline 2014 and the preferred spatial floodplain development pathway or trajectory 2060; based on this trajectory 2060 flood behaviour and damage will be simulated.

Data and Information referring to:

1. the floodplain / Flood Focal Area (FFA) that will be impact flood behavior and flood damage in the floodplain, based on the preferred spatial development pathway;
2. upstream/outside of the floodplain that will impact flood behavior and flood damage in the floodplain, based on the (available or assumed) preferred spatial development pathway of directly upstream areas;
3. in the floodplain that will impact flood behavior and flood damage in downstream floodplains, based on the (available or assumed) preferred spatial development pathway of directly downstream areas.

And related to:

- Population growth and urbanization changes, patterns – increase in population exposed to flood risk;
- Land-use changes and patterns – different land uses will change water use & vulnerabilities as well as land use values impacting on the, flood damage and risks;
- Economic growth and increased standard of living – increases unit flood damage and risk
- Trends and policies for development and change of economic structure (agriculture-services-industries);
- Developments of infrastructure to accommodate and facilitate land use changes and economic structure developments – can interfere with flood flows and exacerbate flood behavior, damage and risk.

Scale and spatial lay out:

During **Task 3** the different sector experts have already provided information at floodplain level and/or district/provincial level, visualized on maps. For **Task 4** quantitative data and qualitative descriptions are required that allow the TD Team to elaborate a list of measures and interventions.

Format:

All available information from different sources needs to be accessible or synthesized in baseline studies or short documents, prepared by Sector Experts (National Consultants). The International Experts Team is concerned with processing and analysing the information towards end products.



Mekong River Commission

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TERM OF REFERENCE

1. Consultancy Summary:

Title:	National Socio-economic Planning Expert (Thailand)
Consultancy type:	Short term Consultant under SSA
Division:	Technical Support Division (TD)
Duration:	August – October 2017
Duty station:	Home based and RFMMC
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	A maximum of 15 working days (10 days for Inception Workshop Task 4, and 5 days for Inception Workshop Task 5B/6B) over the 2017.
Required deliverables for this consultancy:	National sector report

2. Background

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FMM Team under MRCS 2016-2020

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An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

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the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMMP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

- Task 1 Simulation and assessment of existing flood behavior and possible future flood behavior under climate change across the LMB and in the three FFAs and their hotspots.
- Task 2 Delivery of Pilot Projects to identify and implement non-structural climate change adaptation measures, including relevant constructive FRM measures.
- Task 3 Formulation of future floodplain development scenarios, embracing population growth, increase in standard of living, changes to land-use and new floodplain infrastructure developments.
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- Task 7 Demonstrate the formulation of strategic directions to manage existing, future and residual flood risks in the three FFAs, as part of the IRFM Planning Process.
- Task 8 Flood mapping to be integrated in Task 1-7 Reports.

3. Objective of the Consultancy:

To provide technical inputs to implement the Task 4 and Task 5B/6B of Initial Studies Stage-2.

4. Responsibilities and tasks:

In 2015 under Task 3 four different scenarios had been developed, but there was insufficient time to select the preferred scenario and to bring those to a common direction and understanding of the effects for the LMB development.

The main objective of Task 4 of the Initial Studies Stage 2 is to select on the basis of "the preferred future floodplain development scenario" for the transboundary floodplains in Cambodia the physical floodplain infrastructure changes expected to exist in 2060. This refers to the roads and road system, including railroads, ring roads, flood free areas, partially flood free areas, dikes, dams/ reservoirs, irrigation and drainage infrastructure, flood protection infrastructure, and their main dimensions relevant for future flood behavior and damage.

The floodplain development scenario will take into account major factors that affect future flood behavior and damage in the Nam Mae Kok basin floodplain and FFA in Thailand, which are:

1. Population growth and urbanization patterns – increase in population exposed to flood risk;

2. Land-use changes and patterns – different land uses will change water use & vulnerabilities as well as land use values impacting on the, flood damage and risks;
3. Economic growth and increased standard of living – increases unit flood damage and risk
4. Trends and policies for development and change of economic structure (agriculture-services-industries);
5. Developments of infrastructure to accommodate and facilitate land use changes and economic structure developments – can interfere with flood flows and exacerbate flood behavior, damage and risk.

For Task 5B on future flood damage estimation relationships and Task 6B on future flood event damage and average annual damage required crucial inputs of population, economic growth and standard of living.

The existing flood damage relationships for floodplain changes to 2060 need to be adjusted to estimate annual district flood damage in FIP-2060 for various ARIs (average return indices) and to estimate the district average annual damage (AAD) for 2060. Development of the future (2060) flood damage estimation relationships (three damage sectors) requires in selected districts of the basin, representative of future floodplain development conditions (population, standard-of-living, and land-use).

5. Deliverables and timelines:

The following outputs are required from the **National Socio-economic Planning Expert** (National Consultant):

a) Sectoral contributions

Sectoral reviews have been prepared in the initial stage of **Task 3** development. Sectoral contributions for **Task 4** and **Task 5B/6B** need to focus on:

- A visualization of the physical irrigation and drainage infrastructure 2060 in the floodplain/ but particularly in the Flood Focal Area (FFA) that will be added to the baseline situation (2014) as much as possible detailed in parameters relevant for flood behaviour and damage (**Task 4**).
- A detailed perspective for the 2060 floodplain/ FFA development conditions with respect to population, standard-of-living and land-use (**Tasks 5B/6B**).

See Annex 1 for details of sectoral contributions, and Annex 2 for Background information.

b) Participation in workshops

A series of two Regional Workshops is planned:

- First ISS-2 **Inception Workshop (Task 4 - IW-1;** two/three days, tentatively scheduled in the 3rd and 4th week of August in Phnom Penh, Cambodia) – inputs are required from national Sector Experts identifying the additional physical infrastructure (ref. baseline 2014) of the preferred 2060 scenario with focus on parameters relevant for flood behavior and damage.

- Second ISs-2 **Inception Workshop (Tasks 5B/6B - IW-3;** one day, tentatively scheduled in the second week of October; location to be decided) – inputs are required from Sector Experts to define the 2060 floodplain development conditions (population, standard-of-living, and land-use).

During these workshops an active participation from the National Sector Experts (National Consultants) is expected to deepen the specification of the 2060 scenario, to review and comment on draft proposals, and to contribute concrete inputs for the detailing physical infrastructure, expected to be in place by 2060, and that is relevant for flood behavior and damage.

6. Working Arrangement:

The consultant works under the overall supervision of the Technical Coordination Specialist (TCS) for Initial Studies, and will work closely with the different consultants involved in the Study. Duty station of the consultant is the Office of the Secretariat in Phnom Penh, Cambodia.

7. Qualifications and Requirements:

The following qualifications are required for the position of a **Socio-economic Planning Expert from Thailand**:

- The applicant must have a MSc. or PhD. Level university degree in Socio-economic Planning or equivalent;
- The applicant must have access to relevant information and datasets such as Ministries, Statistics Bureaux, Masterplans, Line Agencies and other Senior Experts;
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- It would be considered an advantage if the applicant has previously worked for the Mekong River Commission.

8. Condition of payment (select below and provide justification for the selection)

In consideration for at least two key milestones/outputs: after the completion of the regional technical meeting (see proposed working schedules in the section 6 above) and upon approval of the report from the TD, the MRC shall pay the consultant for the following amounts:

MILESTONE	AMOUNT	TARGET DATE
Upon completion of the report and approval by the TD (100%)		October 2017

9. Intellectual property rights:

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Annex 1

Scope of sectoral reviews

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1. Introduction

- Brief description and summary of the sector development plans.

2. Review of Sector Development Plans

- Comprehensive data overviews through inclusion of maps, chart & figures, and tables – each presented with clear data sources through the following:
 - 1) An updated inventory of master plans/programs/policies affecting the development of the sector in the floodplain / Flood Focal Area over the next decades – with clear indication of status. (include in annex) and the visualization of these in as much detail as possible;
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 - 3) An updated assessment and review in words (and where possible in maps and figures) of the sector development in the floodplain / Flood Focal Area for the next decades as projected by programs/policies reviewed and the visualization of these in in as much detail as possible;
 - 4) Updated overview & summary of available sector development projections (national & floodplain level) as available from international and regional sector studies/programs (UN, WB/ADB, ASEAN) and the visualization of these in as much detail as possible.

Sectors to be covered

From the National Socio-economic Planning Expert the following information related to the floodplain of the Nam Mae Kok basin floodplain and FFA of Thailand is expected for both present conditions and 2060 conditions:

Category	Sub Category	Information needed	Data source
Demographics	Population level (millions)	<ul style="list-style-type: none">• Historic (annual), current and available forecasts for floodplains;• Spatial distribution (maps)	<ul style="list-style-type: none">• National and regional bureau of statistics;• Scenario and forecast studies
	Urbanization (%)	<ul style="list-style-type: none">• Historic (annual), current and available forecasts• Maps or description of urbanization patterns and trends	<ul style="list-style-type: none">• National and regional bureau of statistics;• Baseline studies of relevant urbanization trends.
	Households (hh) and dwellings/housing	<ul style="list-style-type: none">• Number of hh;• Average hh size;• Number of dwellings for each type of housing• Historic and available forecasts	<ul style="list-style-type: none">• National and regional bureau of statistics;• Relevant baseline studies;• Relevant line agencies/ministries.
Economics	GDP, (PPP) (constant prices)	<ul style="list-style-type: none">• Historic (annual) and available forecasts	<ul style="list-style-type: none">• Socio-economic master plans and/or baseline

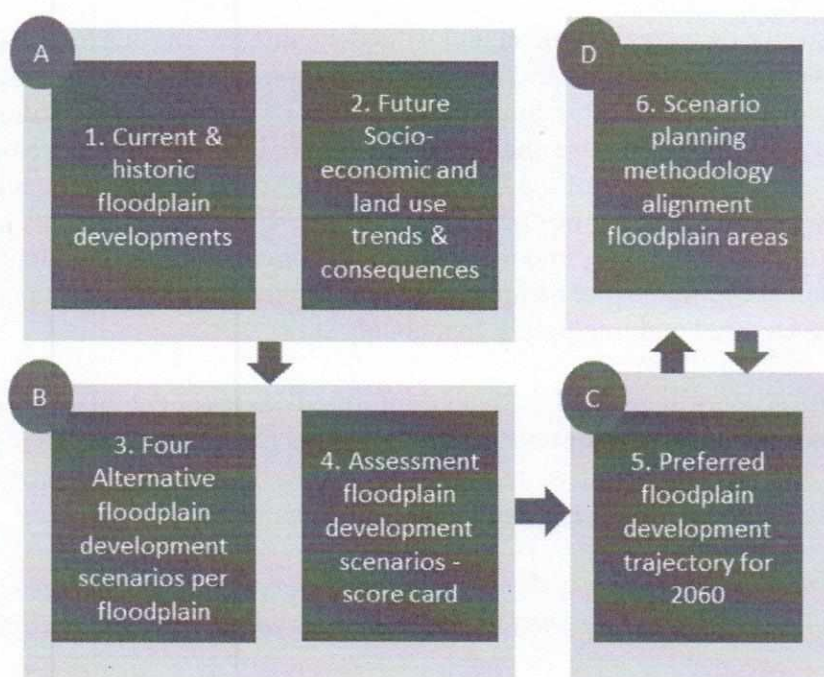
		<ul style="list-style-type: none"> Spatial distribution 	<ul style="list-style-type: none"> studies; national and regional statistics bureau; Relevant line agencies.
	GDP growth rate	<ul style="list-style-type: none"> Historic (average annual real GDP growth rates); Available forecasts. 	<ul style="list-style-type: none"> Socio-economic master plans and/or baseline studies; National and regional statistics bureau; Relevant line agencies
	Sectorial composition and GDP growth rate per sector	<ul style="list-style-type: none"> Historic, current and future projections (%); Spatial distribution 	<ul style="list-style-type: none"> Sectorial master-plans; Baseline studies.
	Dominant sectors per floodplain	<ul style="list-style-type: none"> Description per major sectors: current comparative advantage floodplains and expected trends 	<ul style="list-style-type: none"> Sectorial master-plans; Baseline studies
	Labour force and /or employment data/productivity data per sector	<ul style="list-style-type: none"> Historic, current and future projections Spatial distribution 	<ul style="list-style-type: none"> Socio- economic and /or baseline studies; National and regional statistics bureau; Relevant line agencies
Socio-cultural	Poverty head headcount (PPP)	<ul style="list-style-type: none"> Education levels – historic, current and future projections 	<ul style="list-style-type: none"> Ministry of Education; Baseline studies; National and regional statistics bureau.
	Education levels	<ul style="list-style-type: none"> Investment in human capital, quality and availability to education 	<ul style="list-style-type: none"> Ministry of Education; Baseline studies; National and regional statistics bureau,
	Healthcare levels	<ul style="list-style-type: none"> Access to healthcare 	<ul style="list-style-type: none"> Ministry of Health baseline studies; National and regional statistics bureau,
	Income inequality	<ul style="list-style-type: none"> Pareto index or GINI coefficient 	<ul style="list-style-type: none"> Socio-economic master plans and/or baseline studies; National and regional statistics bureau; Relevant line agencies

Annex 2

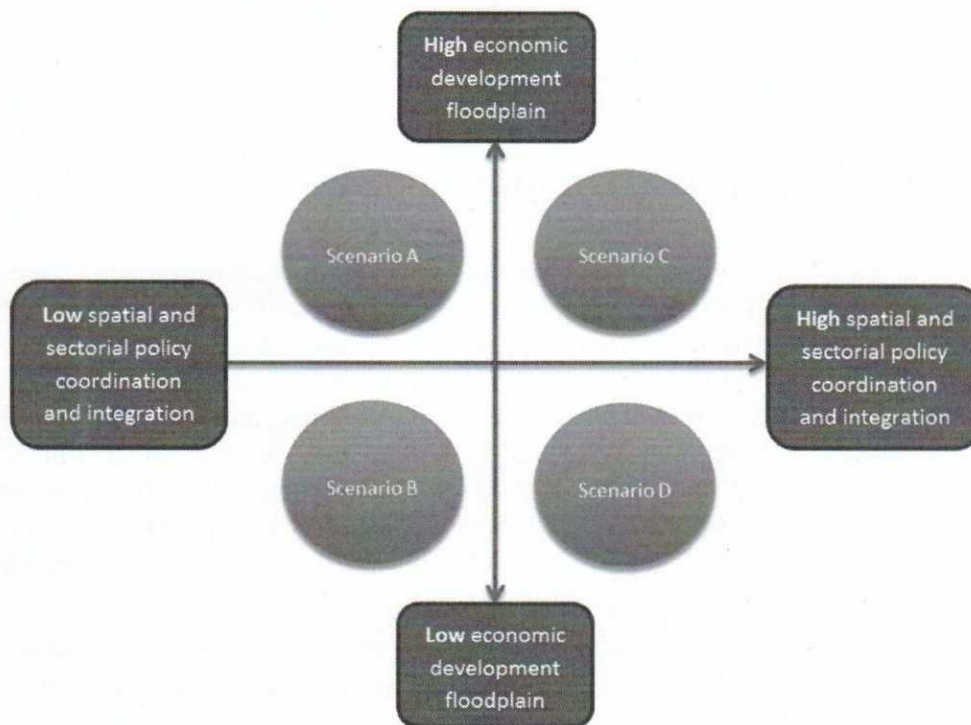
Background of Approach and Methodology

Scenarios are plausible and consistent stories of possible future developments, based on the most relevant and uncertain changes. Scenarios are not forecasts or predictions, rather they are plausible storylines based on a 'what if' principle. Under **Task 3** floodplain development scenarios have been developed to assess the impact of different outcomes on future flood behavior, damage and risk and the performance of possible adaptation options to climate change and upstream developments. Secondly, a *preferred* or *desired* spatial floodplain development trajectory for 2060 would be developed, which represents the 'resultant' of the (uncertain) economic development scenarios, hydrological (including upstream) impacts and developments and spatial development. The selection of the "*preferred special floodplain development trajectory*" is a remaining activity to complete **Task 3**.

The scenarios were developed using following process structure. The analysis was based on information from baseline and sectorial studies and from (expert) input from the different workshops:



- A. Description of the current floodplain developments and future trends. Synthesis is based on regional and national sectorial studies and baseline reports, to be delivered by national consultants. This step was completed.
- B. Development of four alternative future floodplain development scenarios based on land use patterns and trend analysis and assessment of the implications per scenario. First, the main uncertainties were tackled; in analogy with the Mekong Delta Plan 2100 (MDP) scenarios two major uncertainties were used on the axes of scenarios: for the MDP this included economic development (high and low) on y-axis; and spatial and sectoral policy coordination and integration (high and low) on the x-axis (see figure below).



- C. These four scenarios were then offset and valued against the various established climate change (impact) scenarios (high and low) for the region, as these represent country and basin exogenous uncertainties. Economic growth, spatial and sector coordination are seen hereby as key drivers of land use change and hydraulic infrastructure developments that will influence the floodplains of the LMB by shaping irrigation developments, urbanization patterns, hydropower developments etc. These developments have been abstracted from existing policy and master plan documents for the floodplains, and reviewed against economic and demographic development forecasts for the regions, as well as cross-sectorial and integrative spatial cohesion.

The different scenarios enabled a 'better informed' assessment of different adaptation options and/or identify new options and strategies. These could also create a sense of urgency to alter development plans and policies when valued against climate change impact and/or economic development and policy integration.

- D. *Selection of preferred floodplain development trajectory for 2060. This part was discussed but not entirely completed under **Task 3** for all future floodplain scenarios under ISs-1.*

Therefore, the initial input required for the **Task 4** is to assess the different impacts of the future floodplain scenarios, taking into account the uncertainties of economic growth and climate, and *propose a preferred spatial floodplain development pathway or trajectory, which will be used to evaluate the impacts on flood behavior, risk and flood damages.*

Visualizing the interactions between economic developments, land-use patterns and water and land-use policies, as well as the causal factors that explain the push-pull relationships between them, will provide decision makers with information they need to evaluate the consequences of potential actions.

The original developed scenarios will be used for a sensitivity analysis to assess the robustness of proposed measures.

Note: In order to avoid confusion on the terminology, an explicit choice has been made to use 'scenarios' for the future developments that are uncertain and difficult to influence and 'trajectory or pathway' for the preferred developments, that need certain policy interactions and directions, and which are subject to various uncertainties.

Alignment of the scenario planning methodology of the floodplain areas:

A complicating factor here is *the comparison of inter-related development pathways across the four floodplains*: as upstream irrigation/hydropower developments will influence downstream floodplains, the pathways need to be established for the four floodplains as a whole. The implication hereof is, that the pathway with optimal conditions (a certain spatial economic development with high integration) may lead to spatially optimized developments across the four floodplains (e.g. irrigation in floodplain A, and fisheries and water retention in floodplain B), that may not be optimal or desirable with political boundaries and national priorities.

- E. The aim in the next step under Task 4 is to visualize and refurbish the floodplains areas with the physical infrastructure that will be installed between the baseline 2014 and the *preferred spatial floodplain development pathway or trajectory 2060*; based on this trajectory 2060 flood behaviour and damage will be simulated.

Data and Information referring to:

1. the floodplain / Flood Focal Area (FFA) that will be impact flood behavior and flood damage in the floodplain, based on the preferred spatial development pathway;
2. upstream/outside of the floodplain that will impact flood behavior and flood damage in the floodplain, based on the (available or assumed) preferred spatial development pathway of directly upstream areas;
3. in the floodplain that will impact flood behavior and flood damage in downstream floodplains, based on the (available or assumed) preferred spatial development pathway of directly downstream areas.

And related to:

- Population growth and urbanization changes, patterns – increase in population exposed to flood risk;
- Land-use changes and patterns – different land uses will change water use & vulnerabilities as well as land use values impacting on the, flood damage and risks;
- Economic growth and increased standard of living – increases unit flood damage and risk
- Trends and policies for development and change of economic structure (agriculture-services-industries);
- Developments of infrastructure to accommodate and facilitate land use changes and economic structure developments – can interfere with flood flows and exacerbate flood behavior, damage and risk.

Scale and spatial lay out:

During **Task 3** the different sector experts have already provided information at floodplain level and/or district/provincial level, visualized on maps. For **Task 4** quantitative data and qualitative descriptions are required that allow the TD Team to elaborate a list of measures and interventions.

Format:

All available information from different sources needs to be accessible or synthesized in baseline studies or short documents, prepared by Sector Experts (National Consultants). The International Experts Team is concerned with processing and analysing the information towards end products.



Mekong River Commission

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Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Telephone: (856-21) 263 263. Facsimile: (856-21) 263 264

TERM OF REFERENCE

1. Consultancy Summary:

Title:	National Spatial / Land-use Planning Expert (Thailand)
Consultancy type:	Short term Consultant under SSA
Division:	Technical Support Division (TD)
Duration:	August-September 2017
Duty station:	Home based and RFMMC
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	A maximum of 10 working days
Required deliverables for this consultancy:	National sector report

2. Background

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the Governments of Cambodia, Lao PDR, Thailand and Viet Nam. In accordance with the Agreement, the Mission of MRC is “to promote and coordinate sustainable management and development of water and related resources for the countries’ mutual benefit and the people’s well-being by implementing strategic programmes and activities and providing scientific information and policy advice.”

FMMP 2011-2015

All MRC Programmes developed their programme documents for the period 2011-2015 in line with the goals of the MRC Strategic Plan for this period. FMMP was one of the twelve MRC programmes and, since since 2012, had developed particularly strong ties with the Climate Change and Adaptation Initiative (CCAI), the Information and Knowledge Management Programme (IKMP) and the Basin Development Programme (BDP), while links had become increasingly stronger with the Integrated Capacity Building Programme (ICBP) and the Drought Management Programme (DMP). FMMP was also in close contact with the Mekong Integrated Water Resources Management Project (Mekong-IWRM-P), while interaction with the Navigation Programme (NAP), the Environment Programme (EP), the

Agriculture and Irrigation Management Programme (AIP), the Fisheries Programme (FP) and the Sustainable Hydropower Initiative (ISH) had been more of a more ad-hoc character. The linkages between FMMP and other MRC Programmes were well identified.

Flood Management and Mitigation (FMM) represented one of the MRC priorities, as reflected in the MRC Strategic Plan 2011-2015. The MRC will continue to support the MRC Member Countries in this field of flood management and mitigation through FMMP 2011-2015, which followed on from FMMP 2004-2010. The Programme Document for FMMP 2011-2015 (Volume 1: main report and Volume 2: annexes) was adopted by the 33rd meeting of the MRC Joint Committee on 25-26 March 2011 and served as an important MRC reference document.

FMMP Team under MRCS 2016-2020

It was agreed with the MRC Member Countries that with the available means in 2015 the Initial Studies could not be completed. It was agreed that FMMP 2011-2015 would request Development Partners to make “earmarked” funding available to complete the Initial Studies. In January 2016 it became clear that The Government of The Netherlands would be willing to consider additional funding to complete the Initial Studies. A final decision was taken by December 2016.

Since 1st January 2016 the new organizational structure of MRCS has been adopted, merging FMM disciplines into one (Technical Support Division – TD) of the 4 Divisions of the new structure. Key staff of the previous FMMP 2011-2015 have continued in the FMMP/TD Team, while National and International consultants will be contracted to support the FMMP/TD Team to undertake the completion of the Initial Studies.

The Initial Studies

An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

- Output 1.2 Demonstration of the formulation of Integrated Flood Risk Management (IFRM) Plans and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change, for the Nam Mae Kok Basin of Thailand and the Xe Bang Fai Basin of Lao PDR.
- Output 2.4 Impact of climate change on short and long-term flood behavior and forecasting and climate change adaptation are systemized in the RFMMC and Member Countries.
- Output 3.2 Demonstration of the formulation of an IFRM Plan and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change and sea level rise, across the trans-boundary floodplains of Cambodia and Viet Nam’s Cuu Long Delta (joint project).

In addition to climate change, upstream developments (dams) and future changes to the Basin’s floodplains will affect flood behavior and flood risk in the Lower Mekong Basin. Future floodplain changes include the development of new infrastructure, increased population, changes to land-use, a higher standard of living, etc. The Initial Studies address

the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMMP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

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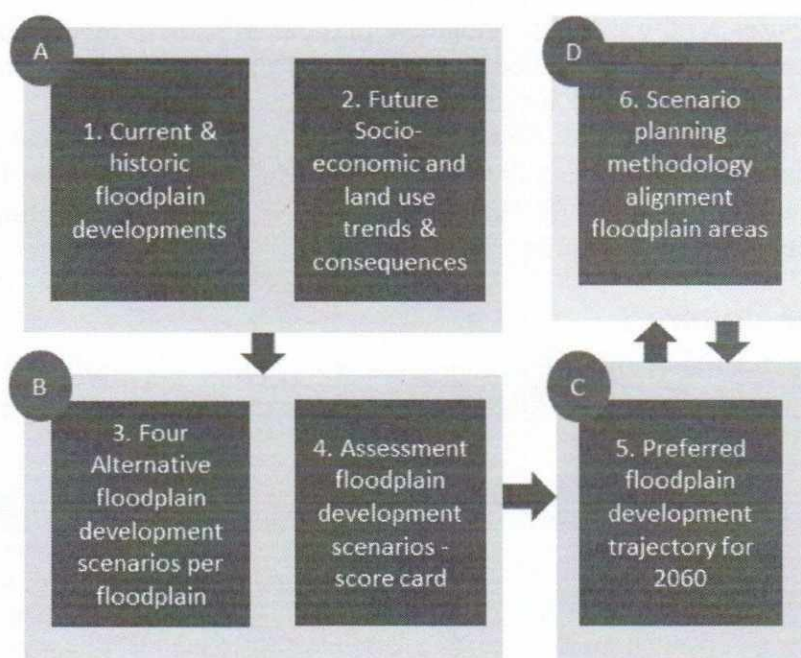
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Major Land-Use Categories	For each Land-Use	<ul style="list-style-type: none">• Type of land-use;• Location and area of Land-use.• Maps or descriptions of major land-use trends.	<ul style="list-style-type: none">• Master plans, Ministry of (spatial) Planning;• Historic Land-use maps;• Forecast land-use maps.
	Spatial Planning Information (land use values)	<ul style="list-style-type: none">• Current Spatial plans and regulations for existing land-uses;• Spatial plans and proposed regulations of anticipated future land uses;• Definitions and locations of current and proposed future 'shallow flooded', 'deep flooded' and 'flood free' areas of the floodplain.	<ul style="list-style-type: none">• Spatial planning maps;• Master plans, Ministry of (spatial) Planning;• Relevant baseline studies.

Annex 2

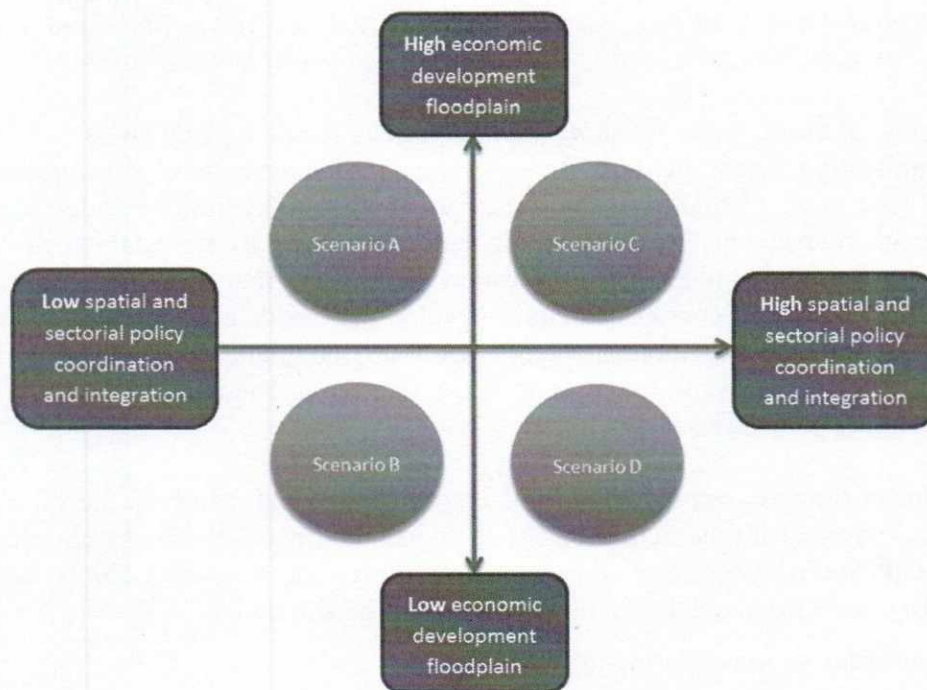
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- A. Description of the current floodplain developments and future trends. Synthesis is based on regional and national sectorial studies and baseline reports, to be delivered by national consultants. This step was completed.
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Therefore, the initial input required for the **Task 4** is to assess the different impacts of the future floodplain scenarios, taking into account the uncertainties of economic growth and climate, and *propose a preferred spatial floodplain development pathway or trajectory, which will be used to evaluate the impacts on flood behavior, risk and flood damages.*

Visualizing the interactions between economic developments, land-use patterns and water and land-use policies, as well as the causal factors that explain the push-pull relationships between them, will provide decision makers with information they need to evaluate the consequences of potential actions.

The original developed scenarios will be used for a sensitivity analysis to assess the robustness of proposed measures.

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A complicating factor here is *the comparison of inter-related development pathways across the four floodplains*: as upstream irrigation/hydropower developments will influence downstream floodplains, the pathways need to be established for the four floodplains as a whole. The implication hereof is, that the pathway with optimal conditions (a certain spatial economic development with high integration) may lead to spatially optimized developments across the four floodplains (e.g. irrigation in floodplain A, and fisheries and water retention in floodplain B), that may not be optimal or desirable with political boundaries and national priorities.

- E. The aim in the next step under Task 4 is to visualize and refurbish the floodplains areas with the physical infrastructure that will be installed between the baseline 2014 and the *preferred spatial floodplain development pathway or trajectory 2060*; based on this trajectory 2060 flood behaviour and damage will be simulated.

Data and Information referring to:

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And related to:

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During **Task 3** the different sector experts have already provided information at floodplain level and/or district/provincial level, visualized on maps. For **Task 4** quantitative data and qualitative descriptions are required that allow the TD Team to elaborate a list of measures and interventions.

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All available information from different sources needs to be accessible or synthesized in baseline studies or short documents, prepared by Sector Experts (National Consultants). The International Experts Team is concerned with processing and analysing the information towards end products.



Mekong River Commission

P.O. Box 6101, 184 Fa Ngoum Road, Unit 18,
Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Telephone: (856-21) 263 263. Facsimile: (856-21) 263 264

TERM OF REFERENCE

1. Consultancy Summary:

Title:	National Transport Planning Expert (Thailand)
Consultancy type:	Short term Consultant under SSA
Division:	Technical Support Division (TD)
Duration:	August-September 2017
Duty station:	Home based and RFMMC
Reporting to:	Technical Coordination Specialist (TCS) for Initial Studies
Total number of days for this consultancy:	A maximum of 10 working days
Required deliverables for this consultancy:	National sector report

2. Background

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the Governments of Cambodia, Lao PDR, Thailand and Viet Nam. In accordance with the Agreement, the Mission of MRC is “to promote and coordinate sustainable management and development of water and related resources for the countries’ mutual benefit and the people’s well-being by implementing strategic programmes and activities and providing scientific information and policy advice.”

FMMP 2011-2015

All MRC Programmes developed their programme documents for the period 2011-2015 in line with the goals of the MRC Strategic Plan for this period. FMMP was one of the twelve MRC programmes and, since since 2012, had developed particularly strong ties with the Climate Change and Adaptation Initiative (CCAI), the Information and Knowledge Management Programme (IKMP) and the Basin Development Programme (BDP), while links had become increasingly stronger with the Integrated Capacity Building Programme (ICBP) and the Drought Management Programme (DMP). FMMP was also in close contact with the Mekong Integrated Water Resources Management Project (Mekong-IWRM-P), while interaction with the Navigation Programme (NAP), the Environment Programme (EP), the Agriculture and Irrigation Management Programme (AIP), the Fisheries Programme (FP) and

the Sustainable Hydropower Initiative (ISH) had been more of a more ad-hoc character. The linkages between FMMP and other MRC Programmes were well identified.

Flood Management and Mitigation (FMM) represented one of the MRC priorities, as reflected in the MRC Strategic Plan 2011-2015. The MRC will continue to support the MRC Member Countries in this field of flood management and mitigation through FMMP 2011-2015, which followed on from FMMP 2004-2010. The Programme Document for FMMP 2011-2015 (Volume 1: main report and Volume 2: annexes) was adopted by the 33rd meeting of the MRC Joint Committee on 25-26 March 2011 and served as an important MRC reference document.

FMMP Team under MRCS 2016-2020

It was agreed with the MRC Member Countries that with the available means in 2015 the Initial Studies could not be completed. It was agreed that FMMP 2011-2015 would request Development Partners to make “earmarked” funding available to complete the Initial Studies. In January 2016 it became clear that The Government of The Netherlands would be willing to consider additional funding to complete the Initial Studies. A final decision was taken by December 2016.

Since 1st January 2016 the new organizational structure of MRCS has been adopted, merging FMM disciplines into one (Technical Support Division – TD) of the 4 Divisions of the new structure. Key staff of the previous FMMP 2011-2015 have continued in the FMMP/TD Team, while National and International consultants will be contracted to support the FMMP/TD Team to undertake the completion of the Initial Studies.

The Initial Studies

An important component of FMMP 2011-2015 is the ‘Initial Studies’ Project, which has been designed to deliver Outputs 1.2, 2.4 and 3.2 of FMMP 2011-2015, namely:

- Output 1.2 Demonstration of the formulation of Integrated Flood Risk Management (IFRM) Plans and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change, for the Nam Mae Kok Basin of Thailand and the Xe Bang Fai Basin of Lao PDR.
- Output 2.4 Impact of climate change on short and long-term flood behavior and forecasting and climate change adaptation are systemized in the RFMMC and Member Countries.
- Output 3.2 Demonstration of the formulation of an IFRM Plan and Strategic Directions to manage future and residual flood risks, including the impacts of possible future climate change and sea level rise, across the trans-boundary floodplains of Cambodia and Viet Nam’s Cuu Long Delta (joint project).

In addition to climate change, upstream developments (dams) and future changes to the Basin’s floodplains will affect flood behavior and flood risk in the Lower Mekong Basin. Future floodplain changes include the development of new infrastructure, increased population, changes to land-use, a higher standard of living, etc. The Initial Studies address the impacts of all these factors on future flood behavior and flood risk in the Lower Mekong Basin.

The Initial Studies build upon work and results obtained under FMPP 2004-2010 for the three flood focal areas (FFAs) described in Outputs 1.2 and 3.2 above. Eight tasks to deliver the above outputs are listed below and described in the Project Proposal document, which was accepted by the FMMP's 26th Programme Coordination Committee meeting, conducted in Hanoi, Viet Nam on 28 May 2015.

- Task 1 Simulation and assessment of existing flood behavior and possible future flood behavior under climate change across the LMB and in the three FFAs and their hotspots.
- Task 2 Delivery of Pilot Projects to identify and implement non-structural climate change adaptation measures, including relevant constructive FRM measures.
- Task 3 Formulation of future floodplain development scenarios, embracing population growth, increase in standard of living, changes to land-use and new floodplain infrastructure developments.
- Task 4 Assessment of possible future flood behavior under conditions of inferred future climate change, future upstream developments (dams) and future floodplain development.
- Task 5 Formulation of existing and future flood damage estimation relationships.
- Task 6 Assessment of existing and future flood event damage and average annual damage.
- Task 7 Demonstrate the formulation of strategic directions to manage existing, future and residual flood risks in the three FFAs, as part of the IFRM planning process.
- Task 8 Flood mapping to be integrated in Task 1-7 Reports.

3. Objective of the Consultancy:

To provide technical inputs to implement the Task 4 of Initial Studies Stage-2.

4. Responsibilities and tasks:

In 2015 under Task 3 four different scenarios had been developed, but there was insufficient time to select the preferred scenario and to bring those to a common direction and understanding of the effects for the LMB development.

The main objective of Task 4 of the Initial Studies Stage 2 is to select on the basis of "the preferred future floodplain development scenario" for the transboundary floodplains in Cambodia the physical floodplain infrastructure changes expected to exist in 2060. This refers to the roads and road system, including railroads, ring roads, flood free areas, partially flood free areas, dikes, dams/ reservoirs, irrigation and drainage infrastructure, flood protection infrastructure, and their main dimensions relevant for future flood behavior and damage.

The floodplain development scenario will take into account major factors that affect future flood behavior and damage in the Nam Mae Kok basin floodplain and FFA in Thailand, which are:

1. Population growth and urbanization patterns – increase in population exposed to flood risk;
2. Land-use changes and patterns – different land uses will change water use & vulnerabilities as well as land use values impacting on the, flood damage and risks;
3. Economic growth and increased standard of living – increases unit flood damage and risk

4. Trends and policies for development and change of economic structure (agriculture-services-industries);
5. Developments of infrastructure to accommodate and facilitate land use changes and economic structure developments – can interfere with flood flows and exacerbate flood behavior, damage and risk.

The existing flood damage relationships for floodplain changes to 2060 need to be adjusted to estimate annual district flood damage in FIP-2060 for various ARIs (average return indices) and to estimate the district average annual damage (AAD) for 2060. Development of the future (2060) flood damage estimation relationships (three damage sectors) requires in selected districts of the basin, representative of future floodplain development conditions (population, standard-of-living, and land-use).

5. Deliverables and timelines:

The following outputs are required from the National Transport Planning Expert (National Consultant):

a) Sectoral contributions

Sectoral reviews have been prepared in the initial stage of **Task 3** development. Sectoral contributions need to focus on:

- A visualization of the physical irrigation and drainage infrastructure 2060 in the floodplain/ but particularly in the Flood Focal Area (FFA) that will be added to the baseline situation (2014) as much as possible detailed in parameters relevant for flood behaviour and damage (**Task 4**).

See Annex 1 for detailed sectoral contributions, and Annex 2 for background information.

b) Participation in workshops

A series of two Regional Workshops is planned:

- First ISs-2 Inception Workshop (Task 4 - IW-1; two/three days, tentatively scheduled in the 3rd and 4th week of August in Phnom Penh, Cambodia) – inputs are required from national Sector Experts identifying the additional physical infrastructure (ref. baseline 2014) of the preferred 2060 scenario with focus on parameters relevant for flood behavior and damage.

During these workshops an active participation from the National Sector Experts (National Consultants) is expected to deepen the specification of the 2060 scenario, to review and comment on draft proposals, and to contribute concrete inputs for the detailing physical infrastructure, expected to be in place by 2060, and that is relevant for flood behavior and damage.

6. Working Arrangement:

The consultant works under the overall supervision of the Technical Coordination Specialist (TCS) for Initial Studies, and will work closely with the different consultants

involved in the Study. Duty station of the consultant is the Office of the Secretariat in Phnom Penh, Cambodia.

7. Qualifications and Requirements:

The following qualifications are required for the position of a **Transport Planning Expert from Thailand**:

- a. The applicant must have a MSc. or PhD. Level university degree in Transport Planning or equivalent;
- b. The applicant must have access to relevant information and datasets such as Ministries, Statistics Bureau, Masterplans, Line Agencies and other Senior Experts;
- c. The applicant must have substantial experience (5-10 years) working with and for Government agencies; and
- d. It would be considered an advantage if the applicant has previously worked for the Mekong River Commission.

8. Condition of payment (select below and provide justification for the selection:

In consideration for at least two key milestones/outputs: after the completion of the regional technical meeting (see proposed working schedules in the section 6 above) and upon approval of the report from the TD, the MRC shall pay the consultant for the following amounts:

MILESTONE	AMOUNT	TARGET DATE
Upon completion of the report and approval by the TD (100%)		September 2017

9. Intellectual property rights:

Intellectual property rights (IPR): Information, data, database, knowledge resources in the forms of briefings, reports, proceedings, articles, essays, etc. issued by and for the MRCS will be the MRCS property. Any utility, announcement and disclosure that are without MRCS highest levels of authority' permission is considered illegal and will be charged by relevant local and international legal procedures.

10. Signature Block

Director of TD: _____

Date: _____

Incumbent: _____

Date: _____

Annex 1

Scope of sectoral reviews

Table of contents

1. Introduction

- Brief description and summary of the sector development plans.

2. Review of Sector Development Plans

- Comprehensive data overviews through inclusion of maps, chart & figures, and tables – each presented with clear data sources through the following:
 - 1) An updated inventory of master plans/programs/policies affecting the development of the sector in the floodplain / Flood Focal Area over the next decades – with clear indication of status. (include in annex) and the visualization of these in as much detail as possible;
 - 2) An updated matrix overview of the sector development plans for the floodplains as per master plan: (e.g. national highway # 5, urban expansion in 2025 of city of Phnom Penh, irrigation scheme X in 2020, etc) and the visualization of these in as much detail as possible;
 - 3) An updated assessment and review in words (and where possible in maps and figures) of the sector development in the floodplain / Flood Focal Area for the next decades as projected by programs/policies reviewed and the visualization of these in in as much detail as possible;
 - 4) Updated overview & summary of available sector development projections (national & floodplain level) as available from international and regional sector studies/programs (UN, WB/ADB, ASEAN) and the visualization of these in as much detail as possible.

Sectors to be covered

From the National Transport Planning Expert the following information related to the floodplain of the Nam Mae Kok basin floodplain and FFA in Thailand is expected for both present conditions and 2060 conditions:

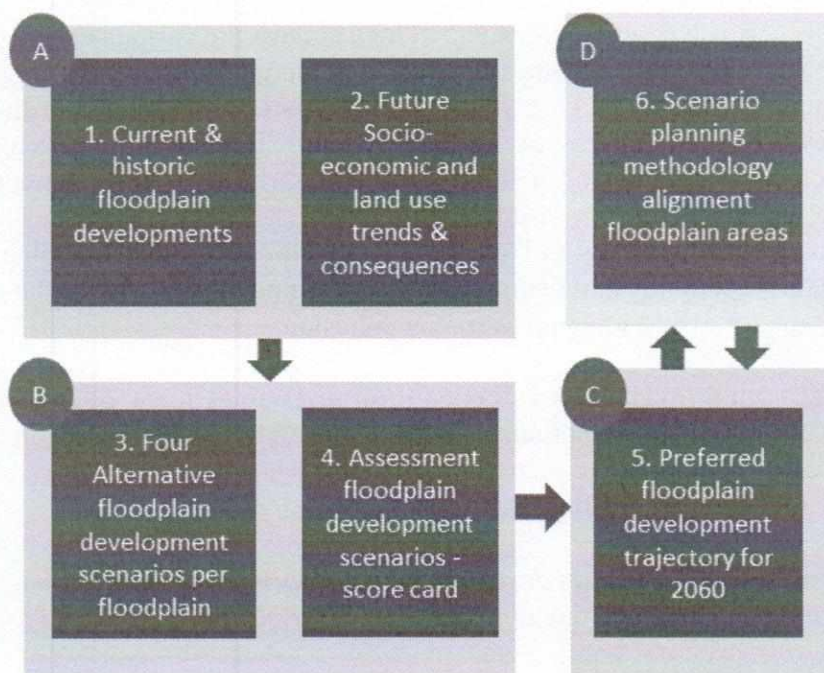
Category	Sub Category	Information needed	Data source
Infrastructure	Transport infrastructure	<ul style="list-style-type: none">• Historic, current and future freight transport (bln ton-km) and modal share (%) data for road, rail and air transport;• Maps showing major current, planned and proposed future transport links;• Plans and details existing, planned and proposed future “all weather” roads including width, height and size of waterway openings.	<ul style="list-style-type: none">• Masterplans;• Ministry of Transport;• Experts.
	Flood protection infrastructure	<ul style="list-style-type: none">• Current and planned flood protection infrastructure.	<ul style="list-style-type: none">• Masterplans;• Experts.

Annex 2

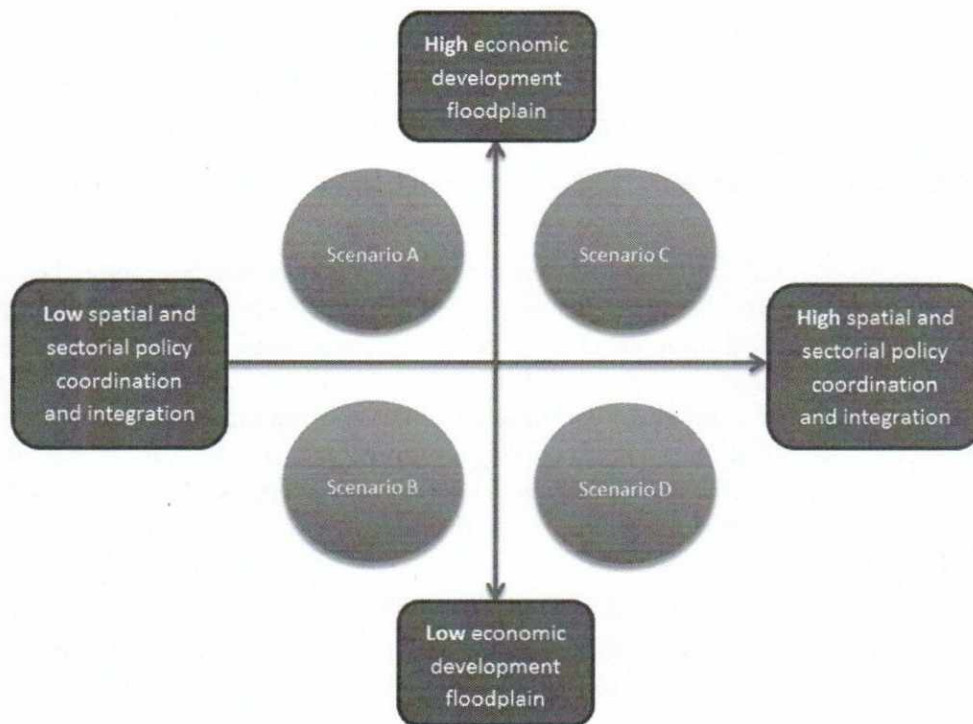
Background of Approach and Methodology

Scenarios are plausible and consistent stories of possible future developments, based on the most relevant and uncertain changes. Scenarios are not forecasts or predictions, rather they are plausible storylines based on a 'what if' principle. Under **Task 3** floodplain development scenarios have been developed to assess the impact of different outcomes on future flood behavior, damage and risk and the performance of possible adaptation options to climate change and upstream developments. Secondly, a *preferred* or *desired* spatial floodplain development trajectory for 2060 would be developed, which represents the 'resultant' of the (uncertain) economic development scenarios, hydrological (including upstream) impacts and developments and spatial development. The selection of the "*preferred special floodplain development trajectory*" is a remaining activity to complete **Task 3**.

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ด่วน

บันทึกข้อความ ๑๕๑๒ น

เลขที่รับ ๑๕๐๐
วันที่ ๑๕ ก.ค. ๒๕๖๐

กลุ่มงานสารบรรณ ทน.
รับที่ 3718
วันที่ ๑๕ ก.ค. ๒๕๖๐
เวลา 13.32 น.

ส่วนราชการ สำนักบริหารจัดการลุ่มน้ำโขง ส่วนจัดการองค์ความรู้ลุ่มน้ำโขง โทร. ๐ ๒๒๙๘ ๖๖๐๕

ที่ ทส ๐๖๓๐/๑๒๕๒

วันที่ ๑๗ กรกฎาคม ๒๕๖๐

เรื่อง รับสมัครผู้เชี่ยวชาญระดับชาติ ๖ ตำแหน่ง เพื่อสนับสนุนโครงการศึกษาริเริ่ม (Initial Study) ระยะที่ ๒ 6543

เรียน อธิบดีกรมทรัพยากรน้ำ

สำนักงานอธิบดี
เลขที่รับ 6543
วันที่ ๑๗ ก.ค. ๒๕๖๐
เวลา 16.๐๕

ข้อเท็จจริง

ด้วย สำนักงานเลขาธิการคณะกรรมการแม่น้ำโขง (Mekong River Commission Secretariat: MRCS) มีหนังสือเลขที่ L-MRCS (TD) 479/17 ลงวันที่ ๑๑ กรกฎาคม ๒๕๖๐ แจ้งว่ากิจกรรมการบริหารจัดการและบรรเทาอุทกภัย ภายใต้แผนการดำเนินงานเพื่อสนับสนุนโครงการศึกษาริเริ่ม (Initial Studies) ระยะที่ ๒ มีความประสงค์จะรับสมัครผู้เชี่ยวชาญระดับชาติ (National Expert) จำนวน ๖ ตำแหน่ง ดังนี้

๑. ผู้เชี่ยวชาญด้านการจัดการอุทกภัย National Flood Management Expert (NFE)
๒. ผู้เชี่ยวชาญด้านแบบจำลองอุทกวิทยา National Hydrologic/Hydraulic Modelling Expert (NHME)
๓. ผู้เชี่ยวชาญด้านการวางแผนการเกษตร National Agriculture Planning Expert (NAPE)
๔. ผู้เชี่ยวชาญด้านการวางแผนเศรษฐกิจและสังคม National Socio-economic Planning Expert (NSPE)
๕. ผู้เชี่ยวชาญด้านการวางแผนการใช้ที่ดิน National Spatial/Land-use Planning Expert (NLUPE)
๖. ผู้เชี่ยวชาญด้านการวางแผนการขนส่งคมนาคม National Transport Planning Expert (NTPE)

โดยผู้สมัครต้องมีคุณสมบัติตาม ToR (Terms of Reference) ดังรายละเอียดตามเอกสารแนบ

ข้อเสนอ/ข้อพิจารณา

สำนักบริหารจัดการลุ่มน้ำโขง จึงได้จัดเตรียมหนังสือประทับตราแทนการลงนามถึงหน่วยงานต่างๆ เพื่อแจ้งประกาศ พร้อมทั้งลงประกาศทาง Website ของกรมทรัพยากรน้ำ ให้ผู้ที่สนใจและมีคุณสมบัติตรงตามลักษณะงานดังกล่าว ส่งหลักฐานการสมัครมายังสำนักบริหารจัดการลุ่มน้ำโขง ภายในวันที่ ๒๕ กรกฎาคม ๒๕๖๐ เพื่อรวบรวมและพิจารณาคุณสมบัติของผู้สมัครส่งให้ MRCS ดำเนินการต่อไป

ข้อเสนอเพื่อโปรดพิจารณา

จึงเรียนมาเพื่อโปรดพิจารณาอนุมัติ

ในนาม
- อธิบดีกรมทรัพยากรน้ำ

นางสาวนวลละออ วงศ์พินิจเวตรม
ผู้อำนวยการสำนักบริหารจัดการลุ่มน้ำโขง

(นายภาตล ถาวรฤชรัตน์)
รองอธิบดีกรมทรัพยากรน้ำ
๑๕ ก.ค. ๒๕๖๐

- เคนธ และเวร อธิบดีกรมทรัพยากรน้ำ
(นายวรศาสน์ อภัยพงษ์)
อธิบดีกรมทรัพยากรน้ำ

เรื่องกลับ กลบ
วันที่ ๑๐ ก.ค. ๖๐
เวลา 13.00