REGIONAL FLYWAY INITIATIVE TRAINING SERIES:

Workshop on Wetland Ecosystem Services and Nature-based Solutions

THAILAND

27–29 November 2023

Introduction to the Preliminary Scoping Appraisal of the Toolkit for Ecosystem Service Site-based Assessment (TESSA)

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Preliminary Scoping Appraisal

Step 1.
Preparation

What is your objective? | What is your 'assessment site'? | What is the site context | Who are the stakeholders? | How will you communicate the results?

Step 2.
Preliminary scoping appraisal

What will change in ecosystem service delivery as a result of a management or policy decision?

What impact will this have on different groups of people in terms of the benefits they get from the site?

Step 3.
Determine the alternative state

How do I define the plausible alternative state?

How do I collect data for the alternative state?

Step 4.
Planning the full assessment

Which services to assess

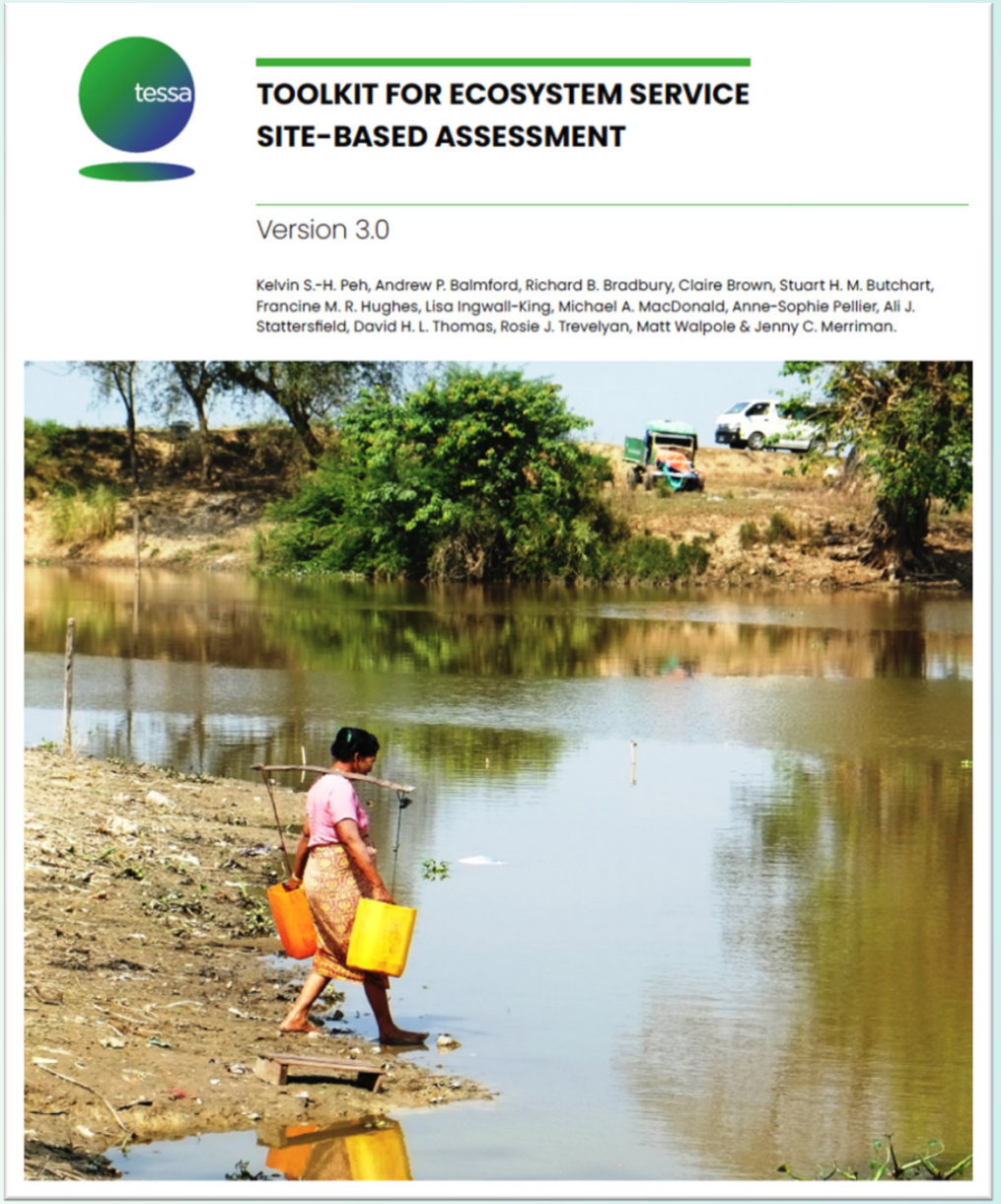
Which methods to use

Step 5.
Collect data at the assessment and comparison sites

Coastal protection | Cultural services | Harvested wild goods | Pollination
Cultivated goods | Global climate regulation | Nature-based tourism | Water services

Step 6.
Analyse and communicate the results

Presenting and Communicating results



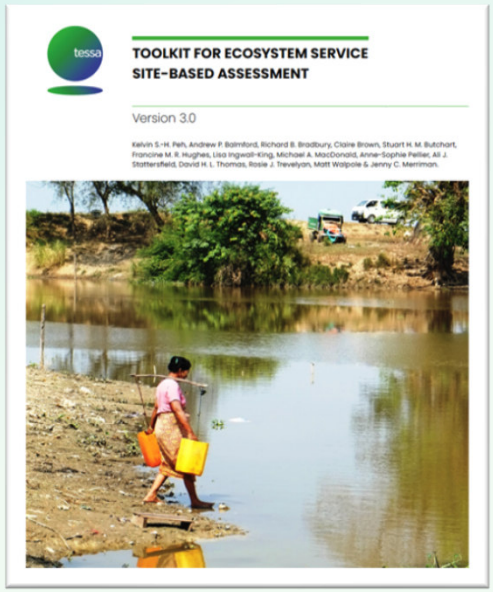
Preliminary Scoping Appraisal (PSA)

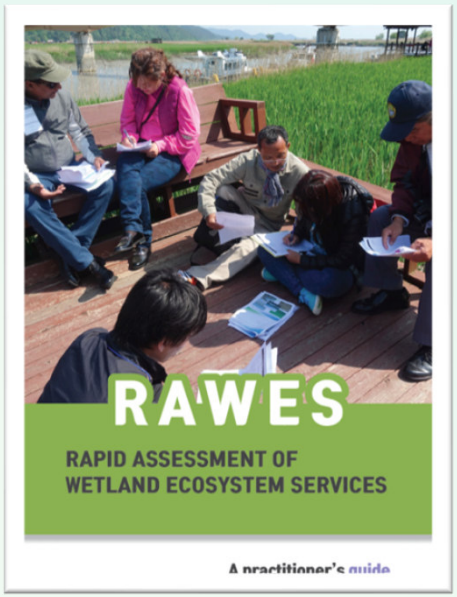
- Scoping exercise.
- Initial understanding of the dynamics of a site.
- Helps us understand:
  - Ecosystem services provided by a site.
  - Changes on provision of ecosystem services under plausible future changes.

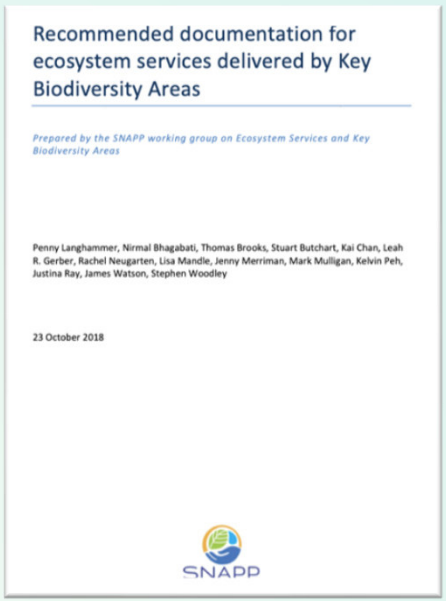
- *This workshop*: we will use the PSA (with elements from other tools):
  1. Site boundaries.
  2. Habitat types.
  3. Provision of ecosystem services.
  4. Drivers of change.

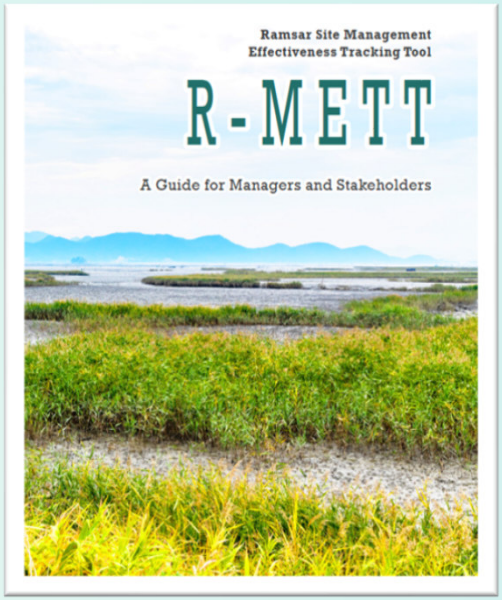
Documentation of ES in RFI wetland sites of Thailand

- This workshop: Combination of toolkits and resources:









- **Framework we will follow.**
- Site-tailored (vs. InVEST, Co$tingNature, etc.).
- Valuations of ES: alternative state (vs. RAWES, PA-BAT+).

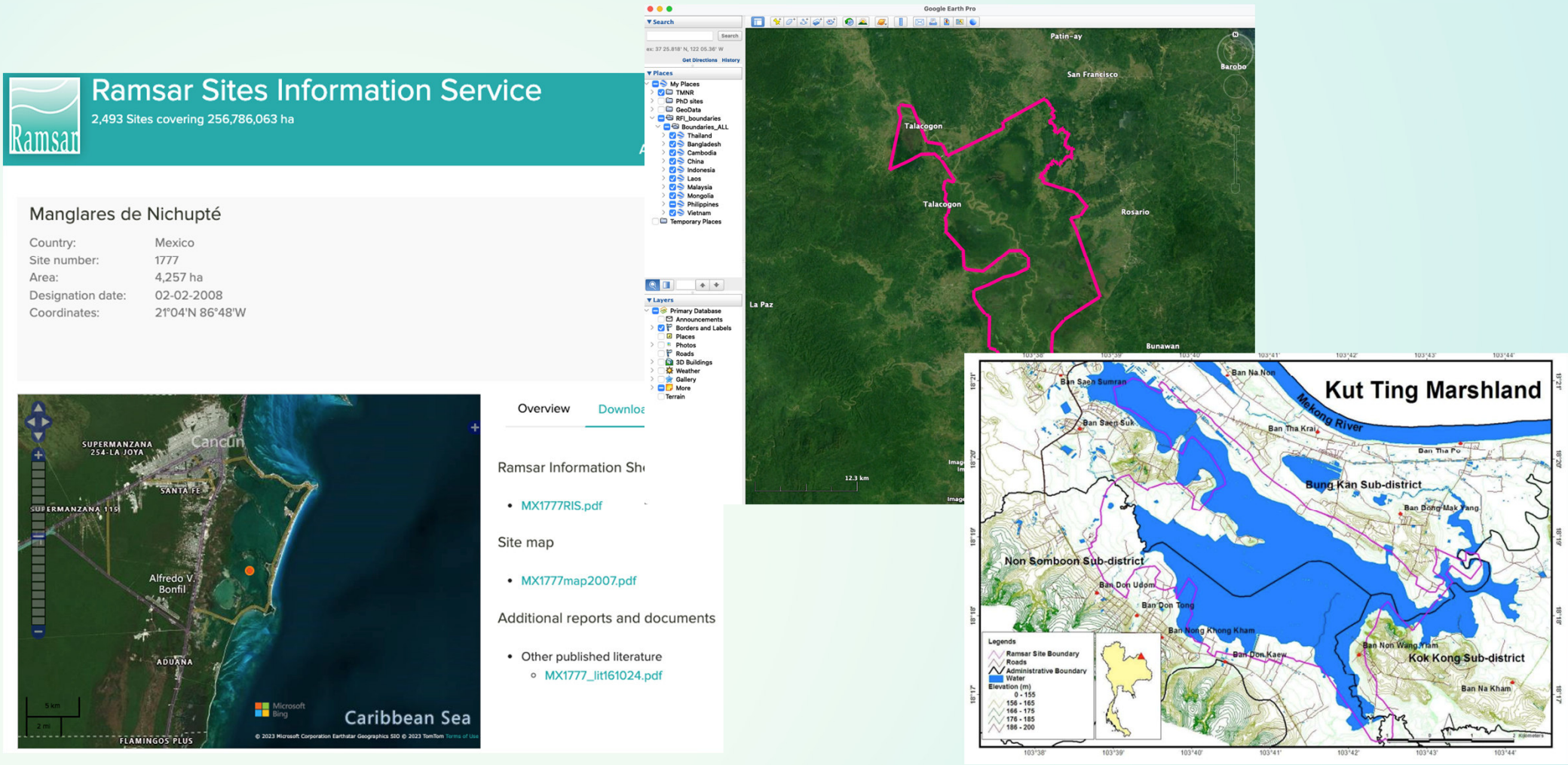
- Ecosystem services classification.
- Tailored for wetlands.

- Recommended fields for ES.

- Classification of drivers of change.
- Tailored for wetlands.

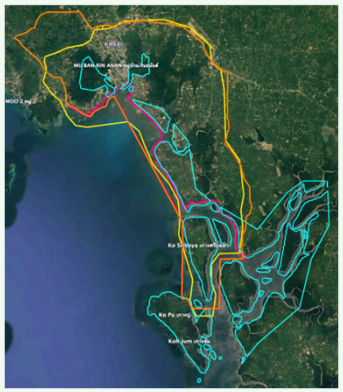
Step 1. Site boundaries

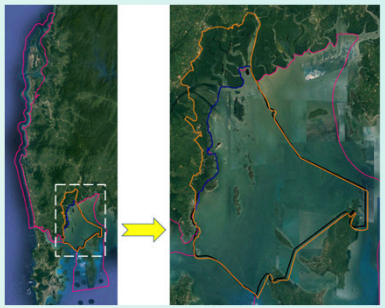
- First step for documenting the ecosystem services provided by a site.
- Can define it manually, or by using available maps, reports, internet resources (e.g., Google Earth), etc.

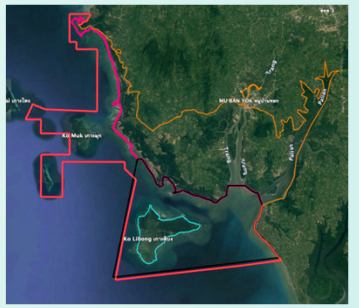


Step 1. Site boundaries – this workshop

- We compiled site boundaries from five databases:
  1. World Database of Protected Areas (PINK/BLACK).
  2. IBA (BLUE).
  3. Ramsar (ORANGE).
  4. EAAF (YELLOW).
  5. KBA (PURPLE).
  6. Estimated (WHITE).







Step 2. Habitat types

- Classify the habitat types within each site.
- Resources: recent land cover/vegetation maps, etc.
- TESSA habitat classification is based on the **Ramsar Classification System for Wetland Type**:
  1. Marine/coastal.
  2. Inland.
  3. Human-made.



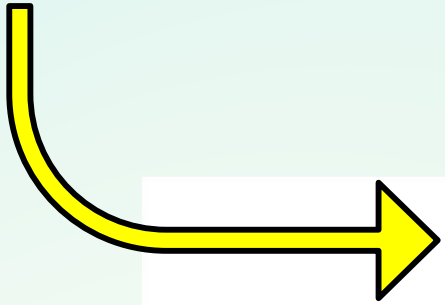
Step 2. Habitat types – this workshop

- Total area and % of each land cover type.
- We will follow: habitat classification of wetlands and framework of TESSA.

Habitat type (TESSA)	Current state	
	Cover (%)	Area (ha)
1. Shrub-dominated wetlands	25	62.5
2. Seasonal / intermittent / irregular rivers / streams / creeks	5	12.5
3. Karst and other subterranean hydrological systems, marine / coastal	44	110.0
4. Freshwater, tree-dominated wetlands	26	65.0
TOTAL	**100%**	**250.0**

Step 3. Ecosystem services

- TESSA framework: scores the top five services provided by the site.



Service category	Specific services	Select the top five services provided by the site [tick box]	Reasons why site is particularly important for this ecosystem services: Large number of beneficiaries [tick box]	High magnitude [tick box]	High irreplaceability [tick box]	Additional detail on the service, beneficiaries and/or importance [text]
Carbon storage and greenhouse gas flux	Carbon storage in trees, soil and mud	✓		✓		Large amount of carbon stored in the soil and mature trees
Coastal protection	Storm protection in coastal area	✓	✓			Large coastal population living adjacent to the area
Harvested wild goods	Firewood	✓		✓		Local source of firewood that is not available elsewhere
·eation /						

Step 3. Ecosystem services – this workshop

- We will cover provision, regulating, and cultural services.
- We will follow:
  - RAWES toolkit: ecosystem services classification.
  - Recommended documentation for ecosystem services delivered by KBAs: recommended fields.
  - TESSA toolkit: Top 5 ecosystem services.

RAWES KBAs TESSA

Ecosystem services		Ecosystem service provided by the site	Service is essential or non-substitutable	Beneficiaries of this ES live (tick all that apply): Within the site	Adjacent to the site	Distant to the site	A high proportion of people in the surrounding area benefit from this ES	Additional detail on the ES, beneficiaries and/or importance	1. Top 5	2. Past	3. Future
Provisioning services: Comprise primarily materials that can be harvested or collected from wetlands and energy taken from ecosystems.											
1	**Provision of fresh water** E.g., Water used for domestic drinking supply, for irrigation, for livestock, etc.	☐	☐	☐	☐	☐	☐				
2	**Provision of food** E.g., Crops, fruit, livestock, capture fisheries, aquaculture, wild foods.	☐	☐	☐	☐	☐	☐				

Step 4. Drivers of change

- How activities will affect the site's habitats and biodiversity.
- TESSA framework: three components (0 - 3 code numbers):

Timing	Scope (% of site affected)	Impact (degree of change in next 10 years)
1. Likely in long term (beyond 10 years)	0. Little of area (<10%)	1. Low (<10%)
2. Likely in short term (within 10 years)	1. Some of area (10- 49%)	2. Moderate (10- 30%)
3. Happening now	2. Most of area (50- 90%)	3. High (>30%)
	3. Whole area (>90%)	

Timing + Scope + Impact = **Score**

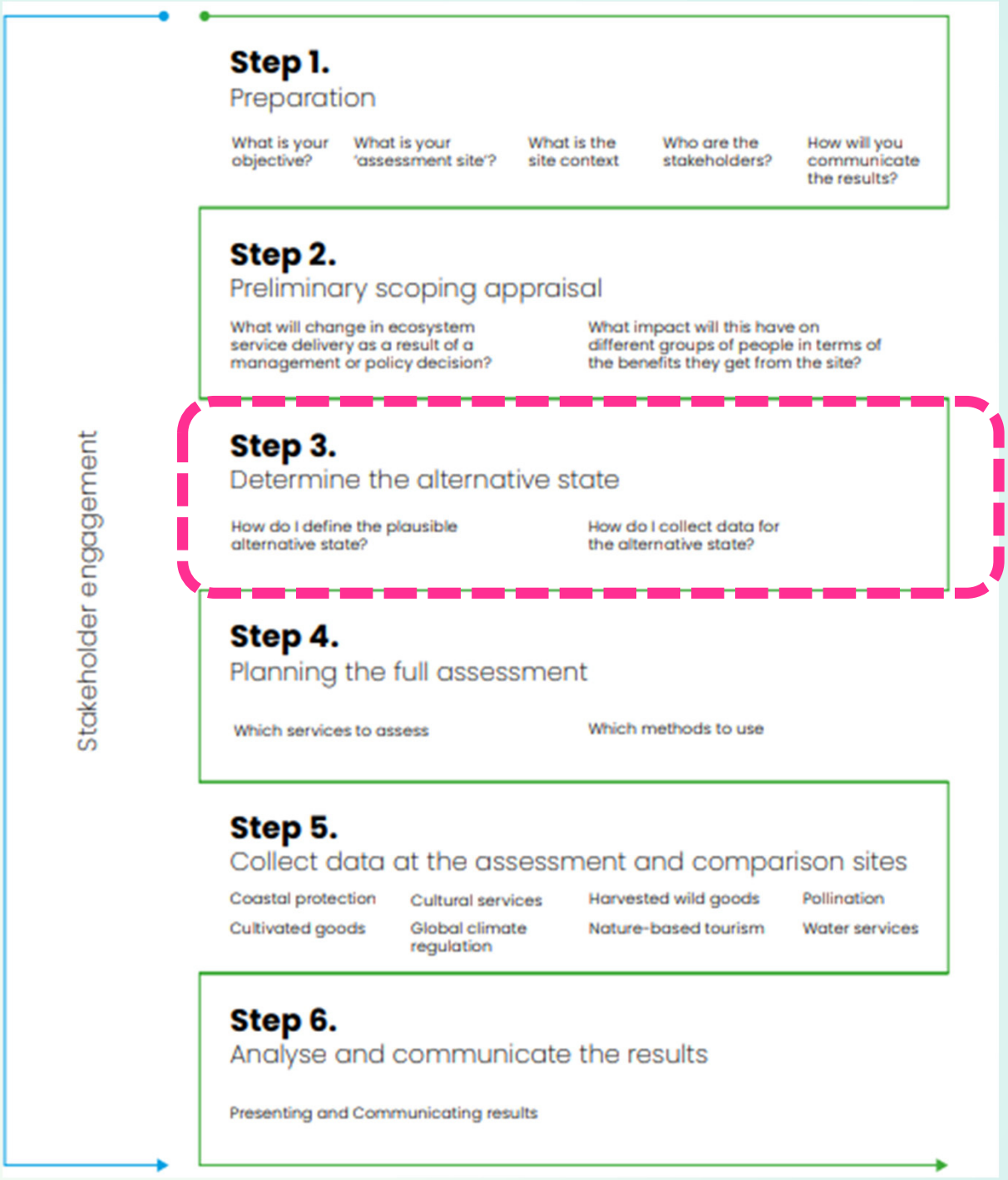
Activities	Timing	Scope	Impact	Score
(Score all that apply)				
Residential and commercial development				
Agriculture and aquaculture				
Energy production and mining				
Transportation and access corridors				

Step 4. Drivers of change – this workshop

- We will follow: Ramsar R-METT '*Data sheet 3: Ramsar site threats*'.
- Impact:
  - **High**: Serious impact.
  - **Medium**: Moderate impact.
  - **Low**: Driver is present, but with minimal impact.
  - **N/A**: Driver is not present.

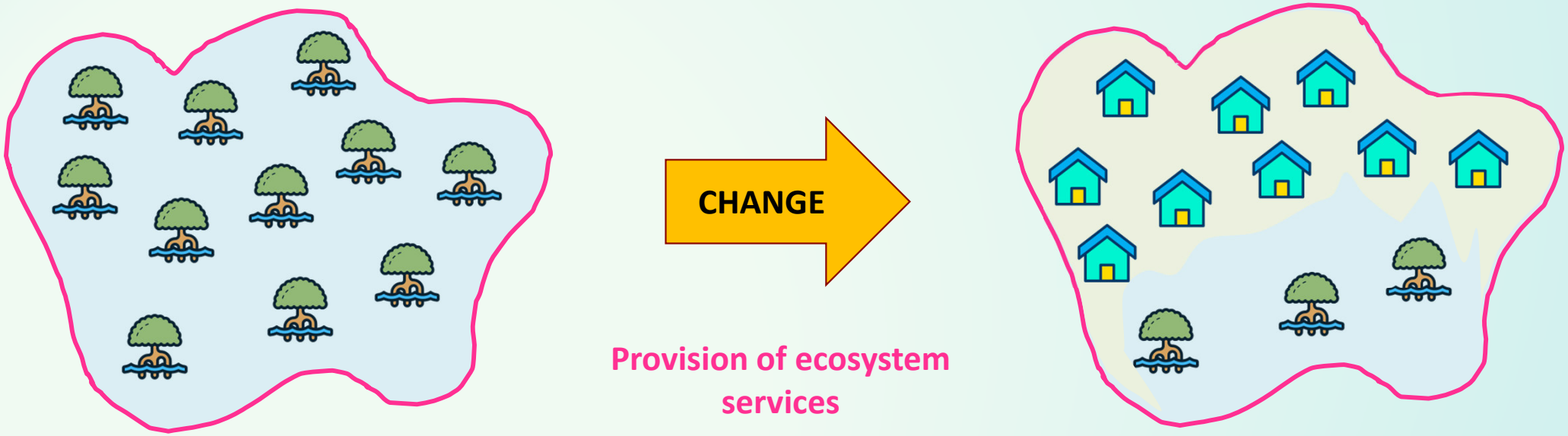
Driver of change		High	Medium	Low	N/A	Notes
Residential and commercial development within the wetland site: Drivers of change from human settlements or agricultural land uses with a substantial footprint.						
1	**Housing and settlement**	☐	☐	☐	☐	
2	**Commercial and industrial areas**	☐	☐	☐	☐	
3	**Tourism and recreation infrastructure**	☐	☐	☐	☐	

The alternative state - TESSA



The alternative state – TESSA rationale

- Most plausible change (e.g., management, land cover, habitat quality).
- TESSA: comparisons between current state vs. alternative state.
- Difference from changes in land use is useful to decision-makers.
- Measurements can be taken from a **real place.**



Mangrove (100%)

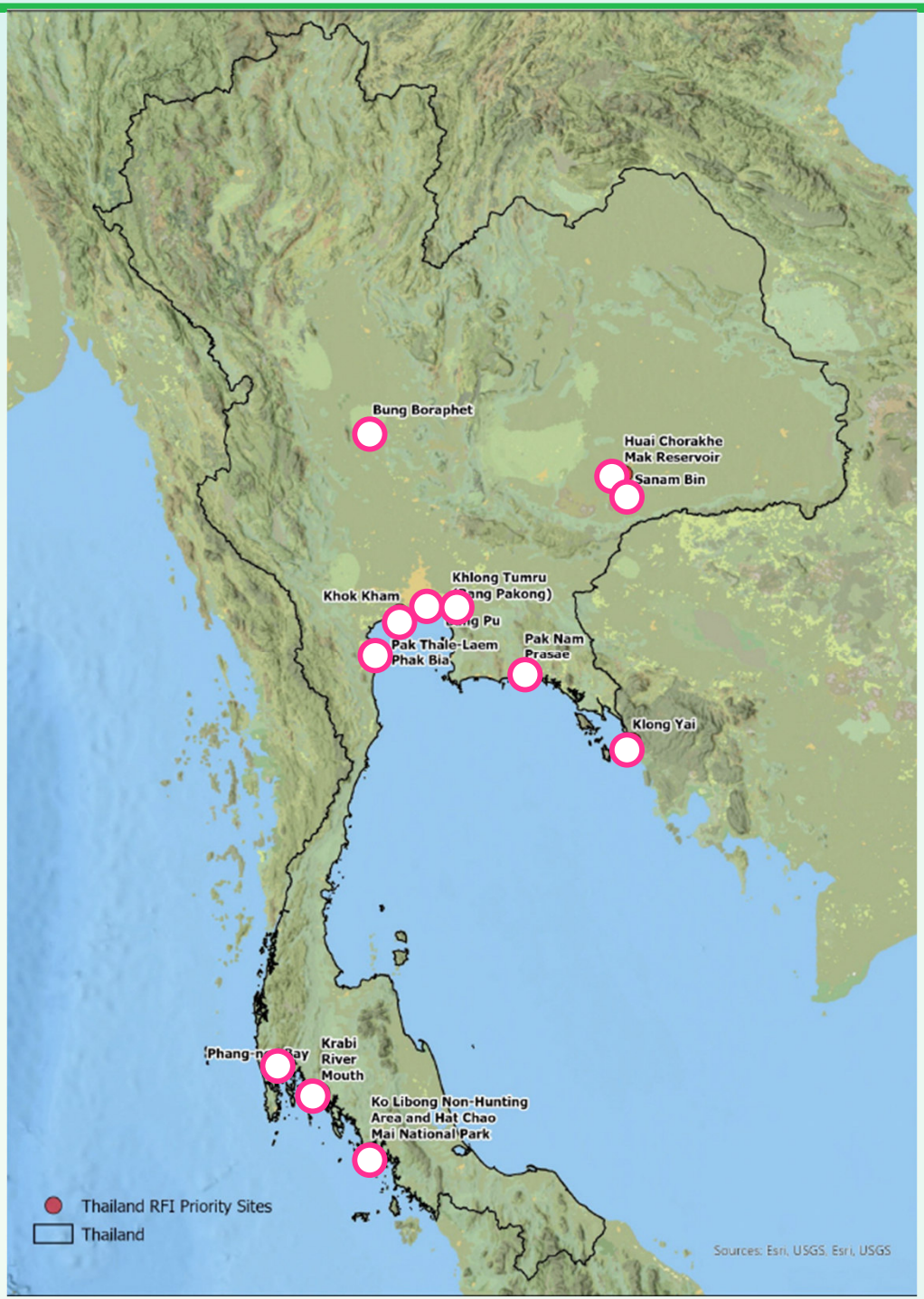
Urban (60%)
Mangrove (40%)

The alternative state – this workshop

- Area of each habitat type within the alternative state.
- We will follow the TESSA framework: total area and % cover.

Habitat type (TESSA)	Current state		Alternative state (business as usual)	
	Cover (%)	Area (ha)	Cover (%)	Area (ha)
1. Shrub-dominated wetlands	25	62.5	10	25.0
2. Seasonal / intermittent / irregular rivers / streams / creeks	5	12.5	6	15.0
3. Karst and other subterranean hydrological systems, marine / coastal	44	110.0	2	5.0
4. Freshwater, tree-dominated wetlands	26	65.0	4	10.0
5. Urban areas	0.0	0.0	70	175.0
6. Bare ground	0.0	0.0	8	20.0
TOTAL	**100%**	**250.0**	**100%**	**250.0**

Documentation of ES in RFI wetland sites of Thailand



1. Scoping Exercise:
   - Site boundaries.
   - Habitat types.
   - Ecosystem services.
   - Drivers of change.

2. Alternative states.

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Assessment of cultivated goods, harvested wild goods, and nature-based recreation and tourism

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Cultivated goods

- Economic value of cultivated goods:
  - *Include*: e.g., aquaculture or plantation products, food and biofuel crops, livestock.
  - *Do not include*: e.g., timber from non-cultivated species.
- Data collection: Existing data, questionnaires.

Cultivated goods – household questionnaire

1. General information	
Name/number of respondent (household)	U Aye Khaing (Male 4, Female 3)
Date	7 Feb 2015
Location/name of village	Pyin Pon village

2. Rice		
Do you grow rice?	Yes✓	No
If NO, do you intend to farm rice at the site in the future? (Yes/No)		
If YES, what is your **total** size of the land you farm in the area (use local units of area if appropriate):	8 acres	
Do you intend to expand your farm in the area in the future? If yes, by how much?	Yes, 4 acres	
Unit of measurement for that crop	tin	
Last year, how much rice did you produce?	700 tins	
Last year, what was the average price obtained per unit**?	600 tins	
Percentage for own use	**21 %**	
Percentage sold/bartered	**79 %**	
Did you, or family members, spend (unpaid) time cultivating/ harvesting/ processing this crop? (Yes/No)	Yes	
If yes, how many person-days did you or your family spend cultivating/ harvesting/ processing this crop last year*?	Cultivating = one month Cultivating = 15 days Processing = 5 days	
Did you hire people to cultivate/harvest/process this crop? (Yes/No)	Yes.	
If yes, how many person-days did hired people spend cultivating/ harvesting/ processing this crop last year*?	50 person-days	
What is the average daily wage rate you paid these hired people (outside of any reciprocal arrangements)?	3500 kyats per day per person	
What is the cost of other inputs for this crop (seed, fertiliser, pesticide, water, fuel for machinery)*?	570000 kyats (570 $)	
What capital items (tools, materials or equipment) do you need for cultivating/ harvesting/ processing this [illegible] tools, m[illegible]nery)?	6,430,000 kyats (6430 $) (Inclu[illegible]Buffalo =	

Harvested wild goods

- Volume, economic net value, and relative importance to people.
- From uncultivated areas:
  - *Include*: e.g., plants for food and medicine, animals hunted for food (fish) or decoration (feathers), fibres (timber, bamboo, rattan), livestock feed.
  - *Do not include*: e.g., crops, products from aquaculture or plantations.
- Data collection: Existing data, questionnaires.

Harvested wild goods – questionnaire for harvesters

Name/number of respondent			
Date			
Location/name of village			
Name of product (*if more than 3 products, use additional forms)*	**1.**	**2.**	**3.**
Quantity and value of product			
Do you harvest this product from the site? (Y/N)			
a. Total days harvesting per year			
b. On average, total harvest per day over that period			
c. Estimated total quantity collected **from the site** per year*			
d. Unit			
e. Percentage for own use			
f. Percentage sold/ bartered			
g. Average price obtained per unit**			
Family labour			
h. Annual time taken by respondent and family members (unpaid) to harvest and process the product (person days)*			
Hired labour			
i. Annual input of hired labour for harvesting and processing (person days)*			
j. Typical daily wage rate paid for hired labour			
Equipment costs* **			
k. What capital items (tools, materials, equipment) do you need for harvesting and processing this product?			
l. How long do you expect each of these tools etc. to last?			
m. How much did each item cost to buy?			

Nature-based recreation and tourism

- Annual total income from tourism/recreation.
- Data collection: Existing data, questionnaires, interviews to experts.

Nature-based recreation and tourism

- Day trippers, domestic, and international tourists:
  - Origin.
  - Mode of transport.
  - Group size.
  - Length of the trip.
  - Money spent.
  - Reason of travel.

Site name/Location interviewed: Entrance Gate	
Date/Time: 5.2.2015 / 10:15 am	
Respondent number: ET002	
1. Mode of Transport: Walk/Car/Bus/Motorcycle/Bicycle/Others(please specify) Car	
2. Type: National day-tripper/Domestic tourist/International tourist National day-tripper	
3. If applicable, how many persons in the travel group?	Number of adults 5 person Number of children (under 5)
4. Where are you from? Bago	**For national day-trippers and domestic tourists**: Indicate which town/city: Within 10 km of this site □ Within 25 km of this site □ More than 25 km of this site □ **For international tourists**: Indicate which country:
5. Did you pay an entrance fee/permit to enter this site? (state currency)	Yes □ No □ If yes, how much _300 MMK_____ (indicate per person or for the whole group)
6. How much have you spent/do you expect to spend **in relation to this trip**? For each: - state currency - indicate per person or for the whole group - indicate whether the suppliers are local (< 10 km) or no-local (> 10 km). For example, a taxi/bus ride from Yangon is non-local, but the food/drinks bought at the stall outside the wetland is local	Transport (e.g. petrol cost, bus fares etc; include return trip) ___4000 MMK____ Food/drinks _____ Travel guides _____ Souvenirs _____ Others (please specify) _____
Questions 7 – 10 for **International tourists and domestic tourists** only	
7. How many nights will you spend away from home whilst **on this whole trip**?	
8. Have you spent/do you plan to spend any nights at or near (less than 10 km) this site?	Yes □ No □ If Yes, state: (1) Number of nights at or near this site: (2) How much is the room rate per night: (3) How much is the guesthouse meal arrangement per person:
9. In total, how much money do you expect to spend **during your whole trip** (state currency)	Estimate _____ (indicate per person or for the whole group)
10. How many days will you spend at this site **during your whole trip**?	
11. Please indicate what proportion of your reason for visiting this site for the following:	Landscape, nature or wildlife ____50___% Cultural, spiritual (visiting religious or spiritual sites, museum, ...

Example (Aung *et al.* 2021)

- *The site*: Moeyungyi Wetland Wildlife Sanctuary, Myanmar.
- *Its value*: Reservoir for birds.
- *The context*: Surrounded by 17 villages.
- *The issue*: Water used for rice cultivation (risk of increase).

- *The tool*: TESSA.
  - PSA / assessment of ecosystem services: current and alternative state.
  - Alternative state:
    - If water level of its permanent lake drops significantly.
    - Nearby site with plausible land use change.

- *Results:* Six important ecosystem services.
  - Will focus on:
    - *Harvested wild goods*: fish, molluscs, plants.
    - *Cultivated goods*: rice.
    - *Nature-based recreation*: bird watching.

Example - results

1. Harvested wild goods

- Total annual net economic benefit from fishing = $15.4 million (=).
- Mean annual net value of fish/household = $3,360.
- 4,577 households.

2. Cultivated goods

- Total annual net value of rice cultivation = $438,000.
- Alternative state = $603,000 (↑).

3. Nature-based recreation

- Total annual recreation revenue = $73,500 (=).
  - International tourists = $54,200 (>70% of all revenue).
  - National tourists = $19,300.


ANY QUESTIONS?