Prospects for Rigs-to-Reef in Southeast Asia: Regional Workshop Findings and Recommendations

Indonesia Decommissioning Conference 2015

Bandung, Indonesia

13-14 August 2015

CIL
Centre for International Law
National University of Singapore

Youna Lyons

Senior Research Fellow, Centre for International Law

NUS
National University of Singapore

Outline

I. Workshop Background and Goals

II. Findings from session 1 on the ecological case

III. Findings from session 2 on the engineering case

IV. Findings from session 3 on the legal and policy case

V. Findings from session 4 on the business case

VI. Recommendations

I. Workshop Background and Goals 1/5

Background:

- **Multi-disciplinary discussion within NUS started in 2011 between ocean law and policy researchers, marine ecologists and offshore engineers on offshore decommissioning.**
- **Later joined by Universiti Teknologi Petronas (UTP)**
- **Provoked by**

(i) the realization that around 500 to 700 offshore installations in Southeast Asia are reaching or have exceeded the duration of their planned commercial life,

(ii) the observation that complete abandonment is not an acceptable solution; and,

(iii) the lack of regional information on the topic.

I. Workshop Background and Goals 2/5

Background:

- **Prof Chou Loke Ming already proposed in the 1980's that disused offshore installations provide an unmatched opportunity for large scale rehabilitation of degraded coral reefs in Southeast Asia, as well as the enhancement of marine biodiversity and fisheries production**
- **In the meantime, in Europe and the US, opposite paradigms have developed:**

- Pro in the US (primarily for recreational fisheries)
- Against in Europe (seen as disguised dumping)

- **The workshop explored the potential benefits, risks and feasibility disused offshore installations to be re-used as artificial reefs for fisheries management, biodiversity enhancement or marine tourism.**

I. Workshop Background and Goals 3/5

Workshop Goals:

(1)improve the visibility of rigs-to-reefs as a potential decommissioning solution among all relevant stakeholders and discuss the fact that it may not be a universally accepted solution,

(2)develop a network of regional experts and knowledge-sharing pathways with research in fisheries, biodiversity, offshore engineering, environmental economics, and law and policy; and

(3)identify the main issues raised by the placement of rigs-to-reefs in Southeast Asia.

I. Workshop Background and Goals 4/5

Participants:

(1)From Academia (Malaysia, Thailand, Singapore):
- marine sciences (especially coral ecology and fisheries),
- ocean law and policy, and
- offshore engineering

(2) From Governments (Malaysia, Thailand, Singapore):
- energy and fisheries

(3) From Industry (Malaysia, Thailand, APAC headquarters)
- Oil and gas operators and decommissioning contractors

I. Workshop Background and Goals 5/5

Outcomes:

(1) Workshop Report available on CIL website

(2)Web-page hosted on CIL website including

- a comprehensive bibliography,

- links to other active organizations/websites on this topic, and

- a research guide on legal and policy issues

Go to ***http://cil.nus.edu.sg/research-projects/ocean-law-policy/offshore-installations/rigs-to-reefs/***

(3) Publication in Tropical Coasts, the journal of the regional organization PEMSEA (Partnership for the Environmental Management of the Seas of East Asia)

II. 7 Findings on the Ecological Case 1/4

1. <u>Ecological conditions are not always suitable</u> for Rigs-to-Reefs. Region specific monitoring and research of marine life developing in and around existing offshore installations is instrumental in choosing the most suitable decommissioning option

Ecological surveying and monitoring of existing installations and sharing of the result would be the easiest way to start this process.

Most scientific data gathered to date comes from the Gulf of Mexico, California and Australia. Similar data is lacking in the region.

2. The South China Sea and surrounding basins present particular <u>ecological and socio-economic characteristics</u> which need to be taken into account in the design of rigs-to-reefs programmes

These include fisheries productivity, population dependence on fisheries (for subsistence and commercial purposes), developing status of most coastal States including poor enforcement capabilities.

II. 7 Findings on the Ecological Case 2/4

3. ***In essence, the rigs-to-reefs concept is not different from that of a large artificial reef***

The difference lies in the leverage of a material opportunity created by the availability of specific structures, retired offshore installations. However, the ecological questions are identical, as are those linked to institutional responsibility, placement, on-bottom stability or interference with other legitimate uses of the sea.

4. There is a clear opportunity to harvest the existing regional artificial reef expertise for rigs-to-reefs purposes through the development of communication channels between oil and gas industry and relevant government agencies (at national and local level)

-long-term commitment and expertise of Malaysia and Thailand with artificial reefs for a variety of purposes

II. 7 Findings on the Ecological Case 3/4

- current trend towards a preference for large scale reefs
- fisheries enhancement and management is the primary use but marine tourism comes next
- Limited if any communication between artificial reef scientists and builders and the oil and gas industry despite alignment of interests between the need of the oil and gas industry to decommission disused installations and the national need of artificial reefs for different purposes

5. Because of the inevitable attraction of fish artificial reefs create, any rigs-to-reefs programme needs to be included within a broader fisheries management strategy

Rigs-to-reefs is not a stand alone solution. It must be developed with other management tools. This is true whether the artificial reef is being deployed for fisheries or for another purpose such as marine tourism.

II. 7 Findings on the Ecological Case 4/4

6. Region specific research on net environmental benefits provided by artificial reefs is needed to support the development of rigs-to-reefs programmes

For results to be comparable, same analytical framework needs to be used & same categories of benefits and impacts on different sites (incl. potential environmental benefits and impacts of rigs-to-reefs programs)

7. ***Rigs-to-reefs can be deployed on a range of scales ranging from national or regional programmes concerning a group of platforms to local community-based deployments of single installations***

Goals will differ depending on scale and locations and the opportunity for deployment may be different depending on the community.

Baram 8 suggests that community based deployments may be the easiest deployments as they may facilitate buy-in from key stakeholders and local implementation of compliance mechanism.

III. 6 Findings on the Engineering Case 1/3

1. Platform removal is <u>not reversed engineering</u> as platforms are designed to last

Cost and time of removal are difficult to predict and engineers assess that overall costs for operators and governments (depends on national rules) are likely to exceed expectations dramatically.

2. Available <u>installation plans</u> might not include subsequent reparations and modifications nor have been passed on to the last operator making structural integrity assessment more difficult

This can also make removal of offshore platforms more difficult and impact the transformation of an offshore installation into an artificial reef if the intention is to remove the platform and topple it.

III. 6 Findings on the Engineering Case 2/3

3. Provided that the structural integrity of the platform permits, <u>full removal in a single lift</u> is generally faster, easier and therefore cheaper than jacket cutting and partial jacket removal (re. small steel jackets)

This means that it can be cheaper to remove the whole installation than leave a part in place for deployment as an artificial reef.

4. Redeployment of an offshore jacket as rigs-to-reefs is <u>technically feasible</u> whether in the same or in an alternate location

However, if a jacket is wholly or partly left in the same location with initial pilings, concerns of structural integrity are alleviated by the removal of the topside it was designed to support.

III. 6 Findings on the Engineering Case 3/3

5. In situations where a part or entire offshore platform is removed to be toppled on the seabed, the risks attached to side-way placement of a jacket on the seabed are dominated by the on-bottom stability of the structure (depending on currents and wave action)

6. Offshore reefing engineering is not yet developed in Southeast Asia but experience can be drawn from the decommissioning industry in Europe and the Gulf of Mexico as well as from Japan's artificial reef engineering experience

IV. 10 Findings on the Legal and Policy Case 1/5

1. <u>International law does not require full removal</u> of disused platforms in all circumstances

But leaving an offshore structure in place after decommissioning is generally difficult or prohibited under the current domestic rules in Southeast Asia.

2. ***Re-using an offshore platform as an <u>artificial reef is not prohibited</u> under international law provided that it does not disguise an authorised disposal at sea, or 'dumping'***

States of Southeast Asia all have rigs-to-reefs programmes. However, the possibility to leave a platform in place and refit it as an artificial reef is more complex.

Difficulties lie in current domestic regulations in Southeast Asia; clearer exceptions to the obligation of removal are needed.

IV. 10 Findings on the Legal and Policy Case 2/5

3. Disposal at sea requires a special authorization and impact assessment as provided in the 1972 London Convention

This Convention sets global standards which are ***a required minimum for all States*** in Southeast Asia, irrespective of whether they are a party to the London Convention (because it is an obligation under UNCLOS).

4. To avoid requalification of fictitious artificial reefs as waste and ensure soundness of an artificial reef programme, each deployment of an artificial reef must be authorized on the basis of an artificial reef plan based on scientific evidence and including expected goals and management plan

Monitoring of the site at regular intervals will also ensure that it aligns with the plan.

IV. 10 Findings on the Legal and Policy Case 3/5

5. The 'success' of artificial reefs programmes in the Gulf of Mexico can be attributed to a clear rigs-to-reefs policy, driven by the oil and gas industry and by fisheries, and relying on three key elements

-First, an obligation to decommission offshore installation within a short time period,

-Second, the value seen by recreational fisheries in offshore steel structures and the economic importance of this industry (a convincing arguments for Department of fisheries to be willing to take over the responsibility for the structure.

-Third, US federal and state legislation integrate artificial reefs programmes into decommissioning solutions and determine legal and institutional transfer of responsibilities between relevant agencies as well as their respective roles and duties.

IV. 10 Findings on the Legal and Policy Case 4/5

6. Rigs-to-reefs events in the Gulf of Mexico are not always seen as being 'successful' from a net ecological benefit perspective

Environmental voices challenge assumptions made in this activity dominated by industry interests and ask that the programmes be stopped temporarily to maintain the natural seabed and review the ecological integrity of the programmes.

7. Clear rules on institutional responsibilities for decommissioning, disposal at sea and deployment of artificial reefs and transfer of responsibilities during these processes are generally lacking in Southeast Asia

8. The lack of legal security and visibility in the process to be followed in order to re-fit an offshore jacket as an artificial reef is creating a legal risk for offshore operators

May turn them away from this opportunity although circumstances may be optimum from a fisheries, tourism, or ecological perspective.

IV. 10 Findings on the Legal and Policy Case 5/5

9. In the context of rigs-to-reefs, the issue of residual liability is constrained to the offshore platform being used as an artificial reef

The terms of the transfer of this responsibility vary. However, there are ways to mitigate this risk, including regular monitoring of the reef and of the structure integrity, which could be paired with the ecological monitoring required.

10. The impact of the presence of threatened or endangered species on an offshore platform prior to its removal is unclear and requires further investigation

Further investigation is needed on legal and policy front as well as, often, ecologically.

V. 5 Findings on the Business Case 1/3

1. A dominant idea in the decommissioning industry is that rigs-to-reefs is not a financially viable option if the removed offshore platform has to be moved far before being deployed or if it has to be brought to shore for cleaning prior to deployment as an artificial reef.

2. Conversely, there is a stronger financial case for deeper platform to be re-used as artificial reefs rather than shallow and close to shore platforms.

However, the few hundreds platforms due to be retired or decommissioned in the region are generally small.

Some are relatively close to the coast (less than 50km) but many are not.

V. 5 Findings on the Business Case 2/3

3. There seems to be a general lack of understanding by oil and gas players of the potential benefits of artificial reefs in the region from a socio-economic as well as ecological perspective.

This suggests that there is an opportunity for training on the benefits and pitfalls presented by such solution.

4.The general perception in this region is not negative towards artificial reefs.

Little if any cultural bias against such concept, unlike the prevalent perception in many developed western countries that environmental management should tend to limit the human footprint and attempt to return the natural environment to the pristine state it was in prior to human exploitation.

Southeast Asia has a generally more pragmatic approach and is more open to man-made solutions involving artificial components to re-create the natural environment.

V. 5 Findings on the Business Case 3/3

5. Due to the complexity and range of indirect costs of decommissioning and rigs-to-reefs (such as corporate reputation), the business case is not limited to the bottom line

A more holistic decision modeling would optimize the decommissioning solution to be adopted. The industry should make better use of decision matrix models based on decision science.

VI. 4 Recommendations

1. <u>Leverage existing large artificial reefs programs</u> to include offshore installations and rigs-to-reefs and integrate them into acceptable decommissioning solutions under domestic regulations. To that effect:

-Establish a knowledge-sharing platform on large artificial reefs across Southeast Asia including monitoring of marine life on and around offshore platforms, and rigs-to-reefs research. To kick-start this, CIL is hosting on its website a research page and bibliography on this topic which displays all the resources provided by experts and different stakeholders;

-Require that <u>operators provide baselines</u> and marine life monitoring for ecosystems living under and around offshore installations (including in relation to all threatened and endangered species);

-Develop research and analytical frameworks to assess region-specific and local environmental benefits of rigs to reefs programs;

VI. 4 Recommendations

2. Develop a national or local dialogue between the offshore industry, the ministry of energy, relevant fisheries authorities, marine tourism authorities and marine conservation authorities focused on

(1)education of costs, benefits and pitfalls of rigs-to-reefs as a decommissioning solution;

(2)the development of regional solutions; and,

(3)the identification of suitable locations for community based rigs-to-reefs projects as pilot cases studies and kick-starting opportunities.

VI. 4 Recommendations

3. Develop clear legal, institutional and administrative rules to facilitate rigs-to-reefs as a decommissioning solution and encourage oil and gas operators to invest research and development in them.

These regulations and measures must include:

- Obligation to remove disused offshore installations within a certain timeframe;
- Exemption rules to the obligation of removal where offshore installations present an overall positive net environmental benefit and do not interfere with safety of navigation or other user of the sea;
- integration of rigs-to-reefs in the list of acceptable decommissioning solutions under domestic law;

VI. 4 Recommendations

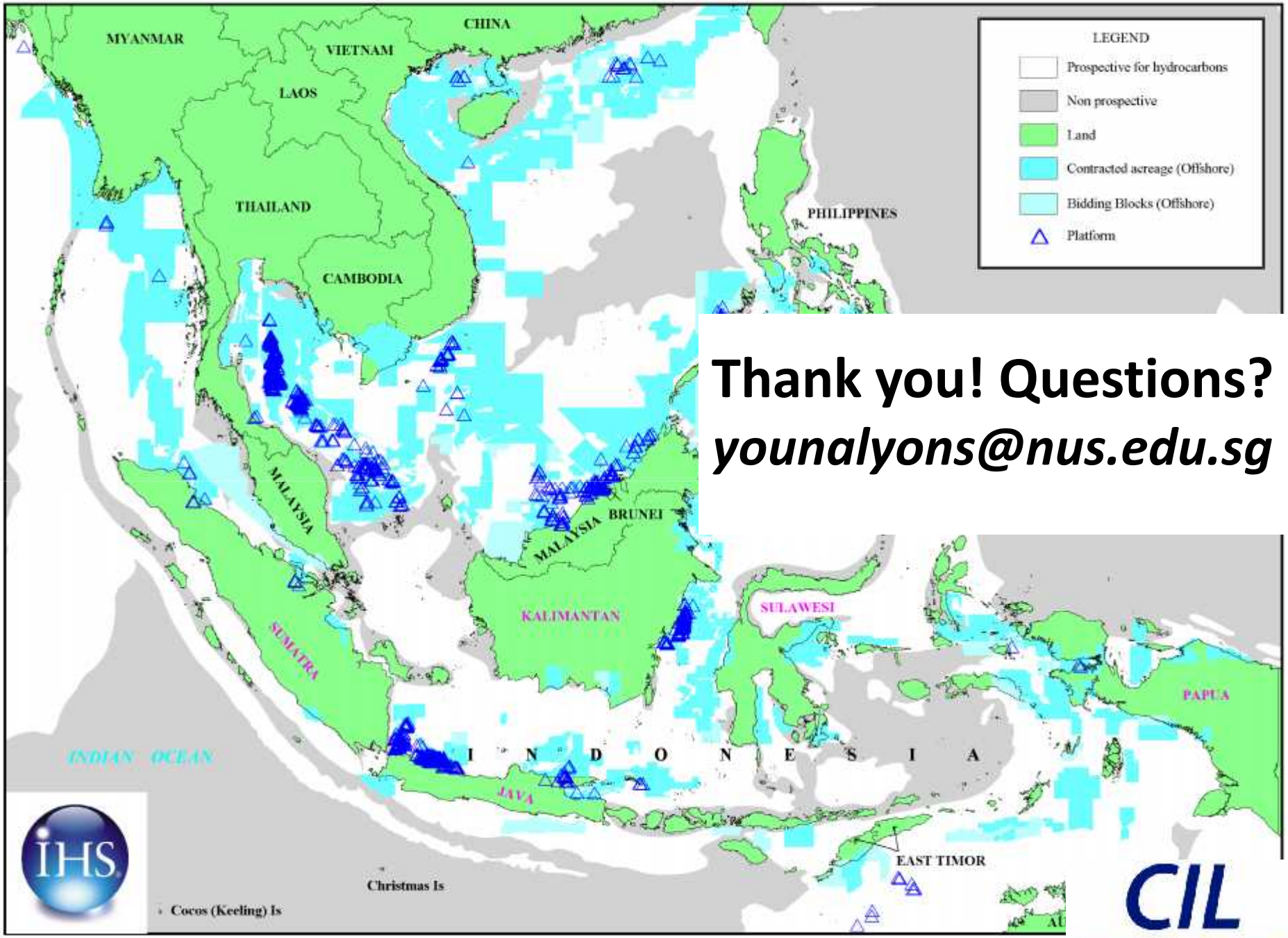
- regulations or administrative measures that ensure the transfer of responsibility to the new authority in charge once an offshore installation has been allocated to a new use. Discharge of on-going responsibility for the structure, including maintenance responsibility is essential to the offshore operator and a key condition for success of rigs-to-reefs programmes;
- clear reefing rules including adequate impact assessments and monitoring required to ensure that ecological condition are suitable and avoid requalification as illegal 'dumping' at sea
- fisheries management measures and compliance mechanisms to protect the new reefs from over-exploitation

VI. 4 Recommendations

4. Improve the assessment of overall costs and benefits of rigs-to-reefs.

This includes two key action items:

- Develop community and stakeholder engagement framework in order to fully understand the impacts and benefits of rigs-to-reefs in Southeast Asia. Identification of relevant stakeholders should be done at different geographical and administrative scales considering all potential stakeholders;
- Use holistic decision matrix models based on decision science in order to optimize the choice of decommissioning solution such as a multi-criteria decision framework integrating relevant criteria (relating to environmental, socio-economic, health and safety and additional stakeholder concerns).

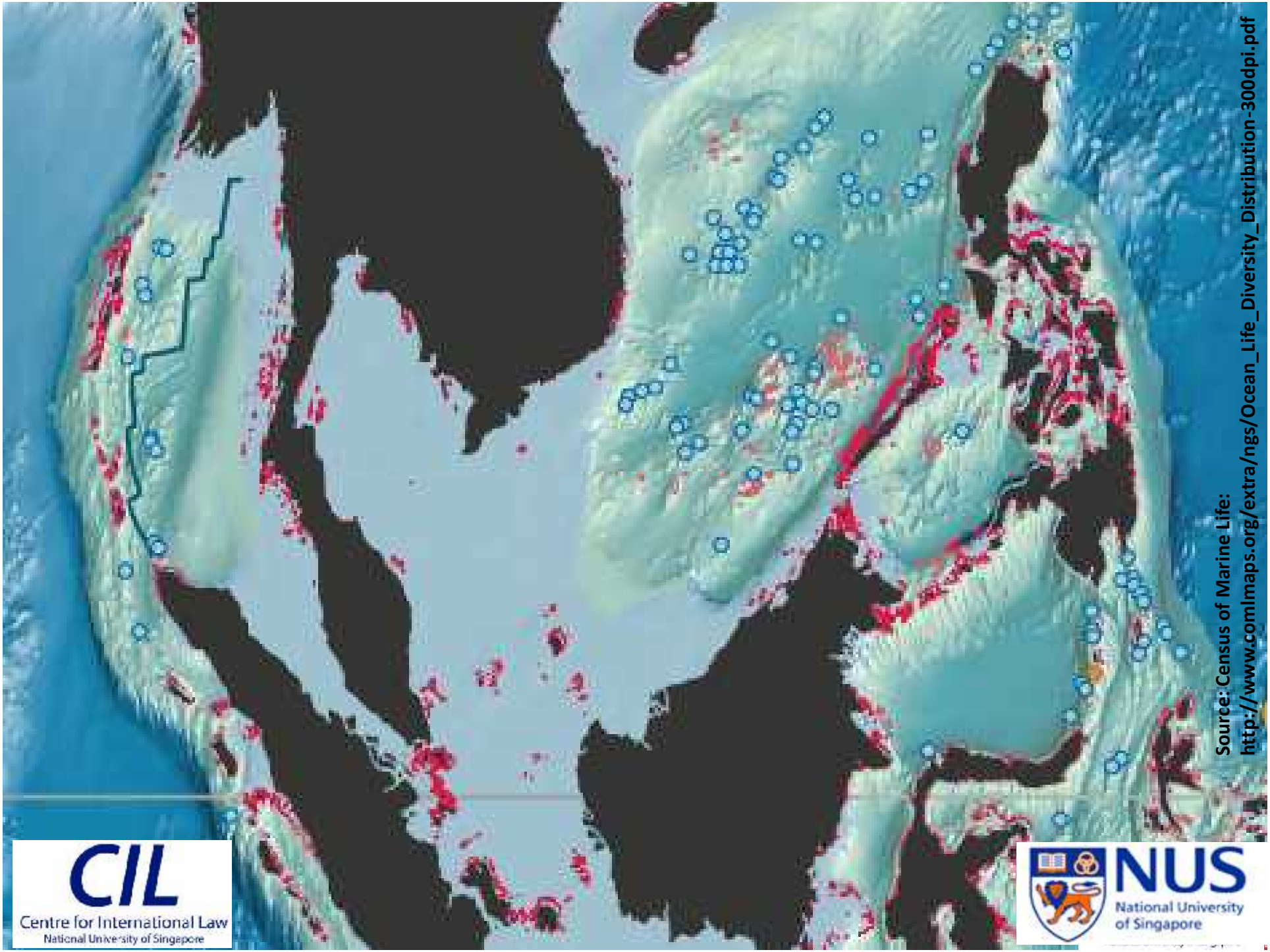


Thank you! Questions?

younalyons@nus.edu.sg

IHS

CIL
Centre for International Law
National University of Singapore



Source: Census of Marine Life:
http://www.comlmaps.org/extra/ngs/Ocean_Life_Diversity_Distribution-300dpi.pdf

CIL
Centre for International Law
National University of Singapore

NUS
National University
of Singapore