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ARE MANGROVE FORESTS DOOMED TO DROWN?

A coastal Ecosystem at Risk

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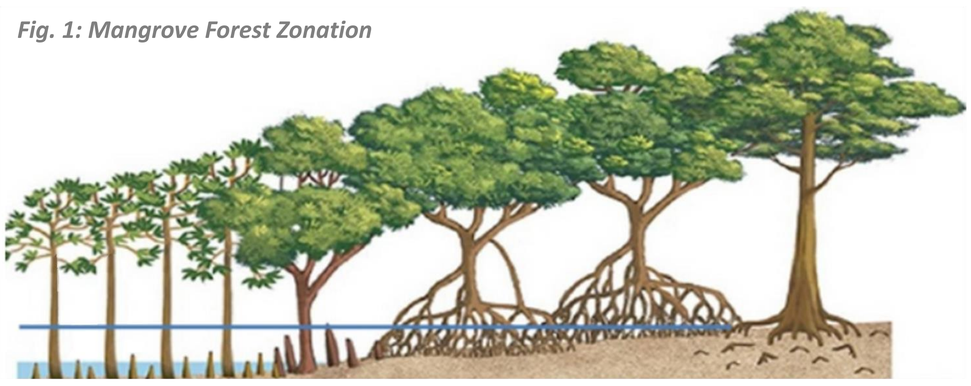
Please visit:

1 Did you know that Mangrove Forests are … ? [1, 2]

- **intertidal** and therefore coastal **wetlands** [*Fig. 1*]
- covering approx. **135,882 km²** globally
- distributed within **sub- & tropical** climates around the globe [*Fig. 4*]
- by almost **1/3** located in **South East Asia**
- only up to **42% covered by protected areas** (incl. large regional variations)
- **threatened due to several drivers** (mostly anthropogenic)
- providing **important functions** for many humans and animals

Fig. 1: Mangrove Forest Zonation



2 Tipping Point(s) [1, 2, 3, 4, 5]

Sea-level Rise

… might be the **greatest** threat of Climate Change

Fig. 2: Dead Mangroves

Cumulative impacts (Drivers)

Resistance & Resilience

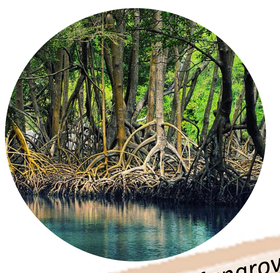
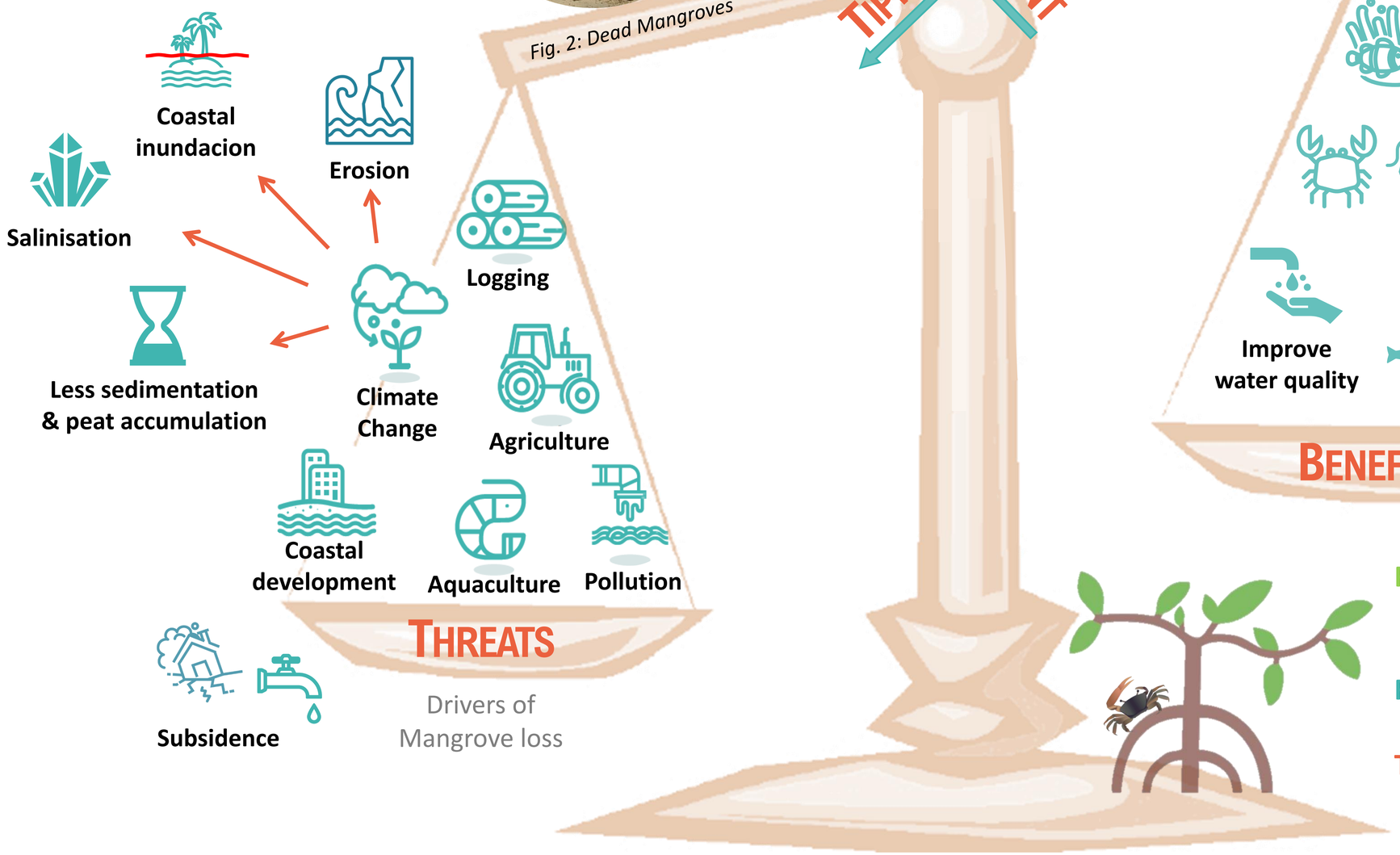


Fig. 3: Intact Mangroves



Why is (more) conservation and restauration necessary?

Resistance: ability to **keep up** with sea-level rise <u>without</u> functional and structural alterations

Resilience: capacity to **naturally** migrate <u>landward</u> in response to sea-level rise

Tipping Points: **<u>not keeping up</u>** anymore (seaward stressor) and having **<u>no</u>** chance for **<u>migration</u>** (landward stressor) due to coastal development

3 Total Alteration in Mangrove Extent from 1996 to 2016 (anthropogenic and climate drivers)

Threats must be reduced,
Benefits valued,
destroyed areas **restored** &
room given for **Migration**

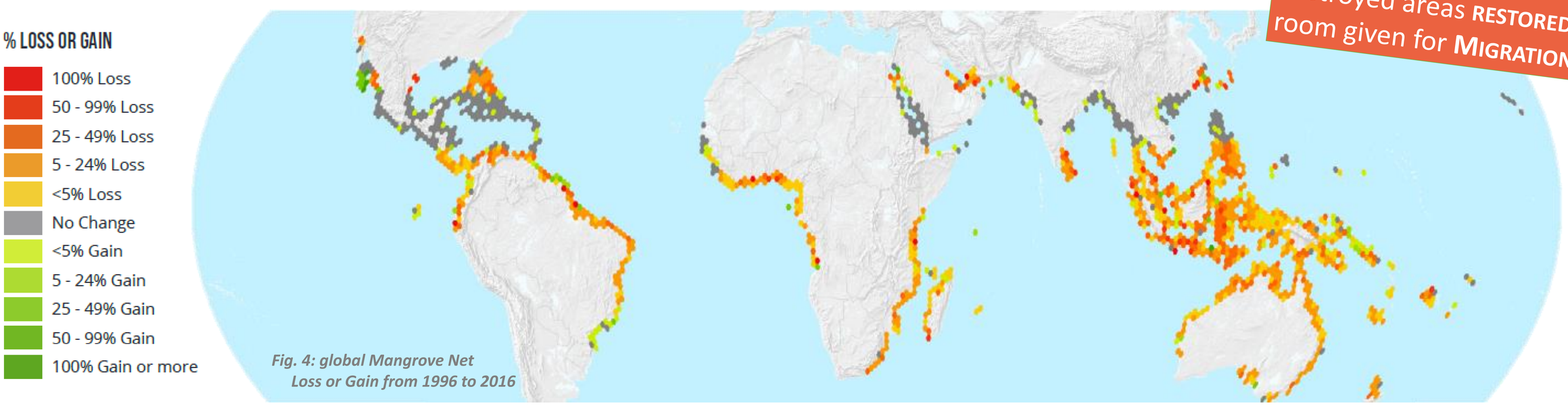


Fig. 4: global Mangrove Net Loss or Gain from 1996 to 2016

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Figures: (1) [Fig. 1] http://praveenanageasen.blogspot.com/2015/07/mangroves.html ; **(2) [Fig. 2]** https://www.treknature.com/gallery/South_America/Brazil/Northeast/Ceara/photo225488.htm ; **[Fig. 3]** https://www.pflanzenforschung.de/application/files/4215/6087/7485/Mangroven_DomRep_Anton_Bielousov_wikipedia.jpeg; **[Cumulative impacts]** based on: Murray-Jones, S (2013) (edit.) 'Proceedings of the Third Seagrass Restoration Workshop. Adelaide. March 2013.' Department for Environment, Water and Natural Resources, Adelaide: p. 14 ; **[Picograms Threats]** Spalding & Leal (2021) ; **[Pictogram Subsidence with House]** https://www.jonsimoninsurance.co.uk/wp-content/uploads/2018/09/Artboard-22.png ; **[Mangrove clipart at the bottom of the scale]** https://www.vecteezy.com/vector-art/125550-mangrove-vector-set ; **[Pictogram Erosion]** https://www.flaticon.com/de/premium-icon/welle_2902671?related_id=2902667&origin=search ; **[Fiddler Crab clipart at the bottom of the scale]** https://vecta.io/symbols/288/fauna-crustaceans/51/uca-annulipes-mangrove-fiddler-crab ; **[Scale, modified]** http://www.clipartbest.com/clipart-yckGEpdcE ; **(3) [Fig. 4]** Spalding & Leal (2021)