

Human Impact

On

COASTLINE CHANGES

Ammar Mirza Bin Hajemi

Puteri Nurbalqis Binti Rithwan

Siti A'ishah binti Khairi

Fatin Noor Syhirah Binti Abd Motalip

Muhammad Azam Fawwaz Bin Ahmad Tarmizi

Nur Tasnim Syamimi Binti Khaironizam



Co-funded by the
Erasmus+ Programme
of the European Union

What is coast ?

Coast or also called coastline or seashore is where the land meet the sea



Cherating Beach

blog.Traveloka.com

For example beach

Human Activities That Affect Shoreline/Coastline

so what is the damage done by human?

Fossil fuel combustion/use is the main source of CO₂ emission, it contribute to sea level rising. it's pproven when the global sea level arise about 17cm between 1900 and 2005. it is to be said much faster than previous 3000 years.

Rising temperature as fossil fuel burning increase the amount of green house gases in the atmosphere and the sea are expexted to rise at faster rates thus increasing the risk of flooding along coast. Research published by Nature Climate Change, it is shown for the first time that burning of fossil fuel responsible for the majority of sea level risees since the late 20th century .

Second factor of coastline changes that caused by human is where some of activities involve in coastal area like developement, tourism, recreation, are also factor for coastal change such as coastal erosian. For example in England beach started to erode away in 1894 as human start to build house on the beachess (Goudie, 2000). Next is jetties and sea wall, this also contribute to coastal erosion as it increase the movement of sediment causing the shrinking of the beach(Bush, Neal, and All, 2004).



COASTLINE CHANGE IN MALAYSIA

IMPORTANCE OF COAST IN MALAYSIA

The coastline area is absolutely crucial for the objective of residents, recreation, tourism, fisheries and agriculture as a source of socioeconomic development of local community. Coastline may occur due to these 2 factors. Natural factors and also by human activities around coast areas. The NCZPP reported that the population areas of Peninsular Malaysia was 6.65 million. These show a rapid increase of more than 18 years. JPS saying that, reclamation in coastal area in some coastal area on Peninsular Malaysia has been reclaimed of land from the sea. A large areas of shallow seas on the west coast of Peninsular Malaysia are convert into dry land. Mangrove's have been cleared and reclaimed for agriculture, aquaculture, industries, housing and others.

WAYS TO OVERCOME COASTLINE PROBLEMS

First objective is to identify the factors. The shoreline will still continue to get changes from many factors like natural phenomena and human activities. It may increase sea level rise for low area where it will expose to flood during itde. Sand dunes, vegetation, and man-made structures provide protection for beaches and communities. Government could built sand dunes that are formed when wind blows the sand across the beach. Sea seed are blown into the pile and begin to build-up. Next, planting vegetation. It's roots put down into the sand and helps the sand in place and make dunes sturdier. The plants must be exceptionally sturdy and persistent in order to survive the harsh conditions. Lasty, Malaysian citizen also can contribute by not throwing non-biogradable things or object along the beach.

Impact of Human Activity on Coastline



"Beach Nourishment"

From: https://commons.wikimedia.org/wiki/File:Flickr_-_The_U.S._Army_-_Beach_Nourishment.jpg

Firstly, beach nourishment is one of the activities by humans that affect the coastline. It is the process of placing artificial additional sediment on a beach. Nourishment entails the removal of sediment from "borrow sites", and the subsequent transport of the sediment to beach areas.

Borrow sites may alter sediment transport, hydrodynamic patterns, marine ecosystems, and sediment transport, such as creating erosional "hot spots" on adjacent shorelines.



"Creation or Stabilization of Inlets"

From: <https://www.geograph.org.uk/photo/6231643>

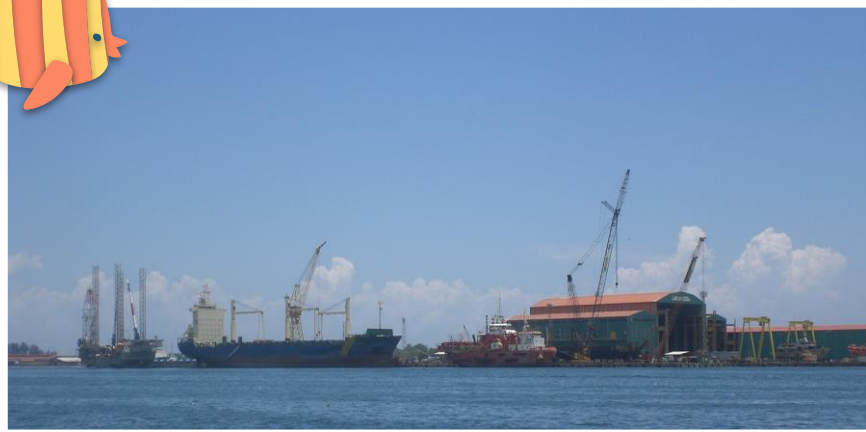


"Sediment Bypassing"

From: [https://commons.wikimedia.org/wiki/File:Seismite_\(Cowbell_Member,_Borden_Formation,_Lower_Mississippian;_Portsmouth_Bypass_roadcut,_Ohio,_USA\)_8_\(48140148207\).jpg](https://commons.wikimedia.org/wiki/File:Seismite_(Cowbell_Member,_Borden_Formation,_Lower_Mississippian;_Portsmouth_Bypass_roadcut,_Ohio,_USA)_8_(48140148207).jpg)

Besides that, creation or stabilisation of inlets such as stormwater inlets in Malaysia is also one of the human activities that bring an impact to coastlines. An inlet is an indentation of a shoreline, usually long and narrow, such as a small bay or arm that often leads to an enclosed body of salt water such as a sound, bay, lagoon, or marsh. Coastlines change adjacent to commonly found tidal inlets will be influenced not only by the Bruun effect, but also by the sea level rise driven basin infilling and climate change driven variations in rainfall or runoff.

Next, sediment bypassing is the transport of sediment by a flow beyond a fixed area of geographical point. The bypassed sediment also causes the loss of important or sensitive aquatic habitat, decrease in fishery resources, loss of recreation attributes, loss of coral reef communities and others.



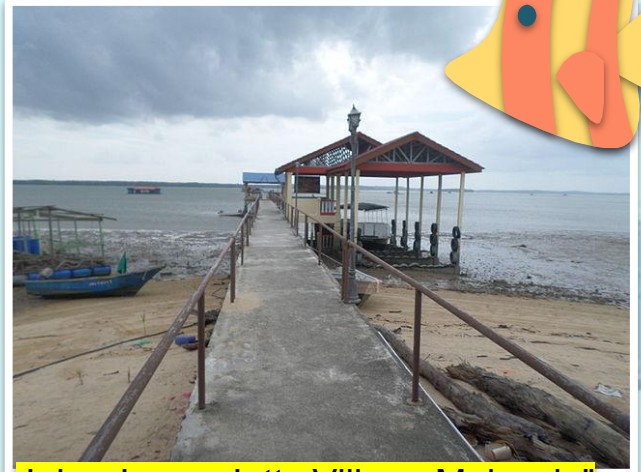
"Dredging of Waterways in Labuan Port,Malaysia"

From:

https://commons.wikimedia.org/wiki/File:Labuan_port-Malaysia.JPG

Furthermore, there is also dredging of waterways for shopping and commerce. Dredging involves excavating sediment and muck from the bottom of our oceans, rivers, bays and harbours to create navigable waterways for shipping traffic. Dredging impacts marine organisms negatively through entertainment, habitat degradation, noise, remobilization of contaminants, sedimentation, and increases in suspended sediment concentrations.

Besides that, hard structures are introduced at the beaches and coastlines such as jetties, grounds and seawalls that are potential to destroy the coastline by interfering with natural processes such as habitat migration, causing the reduction of intertidal habitats.



Johor Lama Jetty Village,Malaysia"

From:

https://ms.m.wikipedia.org/wiki/Fail:Johor_Lama_Village_Jetty.JPG

In addition, large engineering works nearby also affects the coastline. By building river channeling, dam construction and others are examples of what may cause problems associated with development, such as pollution and waste disposal which can affect the sealife like coastline.



"River in Bandar Hilir,Melaka,Malaysia"

From:

[https://commons.wikimedia.org/wiki/File:Bandar_Hilir,_Melaka,_Malaysia_-_panoramio_\(2\).jpg](https://commons.wikimedia.org/wiki/File:Bandar_Hilir,_Melaka,_Malaysia_-_panoramio_(2).jpg)



Importance of coastline

The coastal area is absolutely essential to mankind daily life for the purposes of tourism and recreation, settlement, resource extraction, transportation, agriculture and home for marine life.

Firstly, coastlines are important to tourism because tourism is important for to a country. A tropical country surrounded by seas and ocean provide beautiful beaches and gorgeous islands. From windy atmosphere, unthinkable rocks formation, waterfall, white sandy beaches, colorful coral reefs, blue water and a bunch of marine life to sunrise and sunset panoramic views. Where as could you get these 'heaven on earth views' other than around the coastline?. All these would surely attract tourists. Using coasts as our spots provides a huge impact for economy and make the most of the natural resources that a coast can give.



Image of beach retrieved from cnn.com



Image of fisherman village retrieved from foursquare.com

Next, human make used of the coastlines as settlements. Settlement are communities that have gathered on the coastline and have utilized is an area of residence. In the ancient times, Egyptian build great civilization along the coast of Nils river from Mediterranean Sea to a place now called South Sudan. Nowadays, settlement is coastal areas can be expensive and spatially limited due to its attractiveness, residential and commercial properties

Coastline, a places where the land meet the water contain endless resources that exists and used for millions years and would never run out. Resource extraction from coast mean a lot of different things such as seafood, water, oil and gas, pearl, sand, aquarium animals, medicine ingredients and other materials. All this stuff is used for our need and do on a daily basis.



image of oil rig retrieved from www.bharian.com.my(2018)



image of port retrieved from
www.melaka.gov.my

Then, coastlines are important for transportation. Coastlines provide natural port for trading affairs and moving peoples and things to another place by the sea. Boats, ships, submarine and almost all of the water transportation vehicles anchored at the coastlines. Countries like Malaysia, Singapore, Taiwan and Indonesia concerned their coastlines with benefits like international trading, tourism, transportation and moving across their islands.

Moreover, coastlines provide spaces for agriculture field in tropical countries such as in Maldives, Malaysia and Indonesia. The sandy soil around the beaches is very suitable for palm tree like coconuts to thrive. Coconut is one of the commodity in these countries. Indonesian has the biggest coconuts plantations. Asian use coconuts in various food ingredients. These culture influence a lots in food industries



image of coconut trees retrieved from
<http://syaz1983.blogspot.com/p/pokok-kelapa.html?m=1>



image of coral reef retrieved from
www.openaccessgovernment.org

Hence, marine coastline is important as habitat area for marine life. Most of marine animal eating, rest even breeding in this shallow area. Without coastline, there are no seafood supply for us to consume.

We can conclude that coastline is very important to human in various aspects. Coastline is important to attract tourists, settlements, resources, transportation, agriculture, and food supply.

Ways to Overcome Coastline Changes

Firstly, earth barrier walls is a wall that made of sand bags. They are the most excellent solutions to stabilize the coastal areas from erosion. They are deployed rapidly and work excellently in virtually every area prone to erosion. They are designed to be placed on shorelines, beaches. They can be used to protect residential along the beach and provide a solid defense against incoming tides and wave action. Sandbags could be buried on a beach to make them become stronger. The bags are usually filled with sand in order to make them a solid beach infrastructure component.



Sandbags at Cha Am beach, Thailand

From :

<https://www.dreamstime.com/phot-os-images/sandbag-wall.html>



Tropical beach plants in Tioman Island, From : <https://www.alamy.com/stock-photo-wild-tropical-beach-at-dusk-with-flowers-and-plants-tioman-island-30602725.html>

Secondly is vegetation. Strategic planting of vegetation can be used to help control coastline changes. The roots of coastal plants help to anchor the sand and ensure that it is not carried off in erosion. This is why many areas plant seagrass and build marshes along coasts to prevent coastline changes.

Thirdly is breakwater tubes which are designed for long, extended and demanding support for sensitive erosion shoreline. The tubes act as an easy anti-erosion tools. They are the primary line of defense against waves when they break along the shore and beach. They permit the beach to naturally gather and retain sand, thus helping the long-term deterioration of the shoreline. Breakwater tubes have a very long service life as they are made from sturdy biodegradable materials.



Breakwater tubes in Tanjung Piai, Johor, Malaysia

From :

https://www.researchgate.net/figure/Sand-filled-geotextile-tubes-used-in-Tanjung-Piai-Johor-Malaysia-to-reduce-wave_fig31_45532221

REFERENCES

Coast. (2021, January 07). Retrieved January 10, 2021, from <https://en.m.wikipedia.org/wiki/Coast>

Threats to the coastal zone. (n.d.). Retrieve January 10, 2021, from http://www.coastalwiki.org/wiki/Threats_to_the_coastal_zone

Six reasons why coasts are important.(n.d.). Retrieved December 30, 2020, from <https://karimedalla.wordpress.com/2012/04/11/six-reasons-why-coasts-are-important/>

Wisp, W. (2019). Ways to Stop Coastal Erosion. Retrieved January 08, 2021, from <https://sciencing.com/ways-to-stop-coastal-erosion-13406882.html>

Gunter, N. (2017). Ways to Prevent Beach Erosion. Retrieved December 30, 2020, from <https://www.seawallprosfl.com/ways-to-prevent-beach-erosion/>

Davis R.A. (2005) Human Impact on Coasts. In: Schwartz M.L. (eds) Encyclopedia of Coastal Science. Encyclopedia of Earth Science Series. Springer, Dordrecht. https://doi.org/10.1007/1-4020-3880-1_175

Surfrider Foundation Copyright (2010) Surfrider Foundation. Shoreline Structures. [Beachapedia. http://www.beachapedia.org/Shoreline_Structures](http://www.beachapedia.org/Shoreline_Structures)

Mangor, K. (2020): *Human causes of coastal erosion*. Available from http://www.coastalwiki.org/wiki/Human_causes_of_coastal_erosion

Ducrotoy, J.P. (2020): *Threats to the coastal zone*. Available from http://www.coastalwiki.org/wiki/Threats_to_the_coastal_zone

Mangor, K., Drønen, N. K., Kaergaard, K.H. and Kristensen, N.E. 2017. Shoreline management guidelines.

Abd Maulud, K.N., & Mat Rafar, R., 2015. Determination the Impact of Sea Level Rise to Shoreline Change Using GIS.Proceeding of The 2015 International Conference on Space and Communication (IconSpace), 10-12 August. Langkawi, Malaysia.

Alex, J., Coastal Erosion. (n.d.) Retrieved December 30, 2020 from <https://geographyas.info/coasts/coastal-erosion/>

Goudie, A. (2000). The Human Impact on the Natural Environment. Great Brittain: MIT Edition, 2000. Print.

Special Thanks

Universiti Malaysia Terengganu

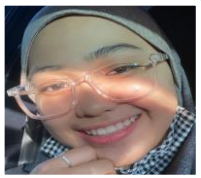
- Institute of Oceanography and Environment, INOS
- Faculty of Science and Marine Environment, FSSM
MARE (Marine Coastal and Delta Sustainability for
Southeast Asia)

European Union Erasmus+

The project by first year students
Bachelor of Science (Marine Science), Year 2020
Course Fundamental of Marine Science (MMS3009)



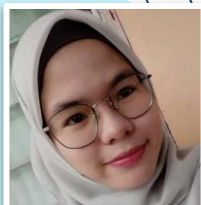
I wish people would appreciate our coastline as it is very important to our country.
-Muhammad Azam Fawwaz Bin Ahmad Tarmizi



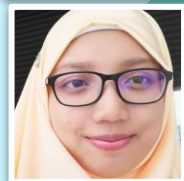
My wish to A plastic-free ocean. The best way to reduce plastic waste in the ocean is to stop buying things we don't need.
-Puteri Nurbalqis Binti Rithwan



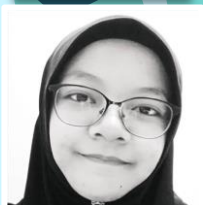
My soul is full of longing for the secret of the sea, care for it until all is known
-Ammar Mirza Bin Hajemi



Oceans are not just bodies of water
There's are life beneath it
Time has come to protect and save them
-Nur Tasnim Syamimi Binti Khaironizam



A sea of united voices are equal to an ocean full of greatness.
-Siti A'ishah binti Khairi



Every life in the earth important whether in sea, sky or land so make sure take care of it guys.
-Fatin Noor Syhirah Binti Abd Motalip