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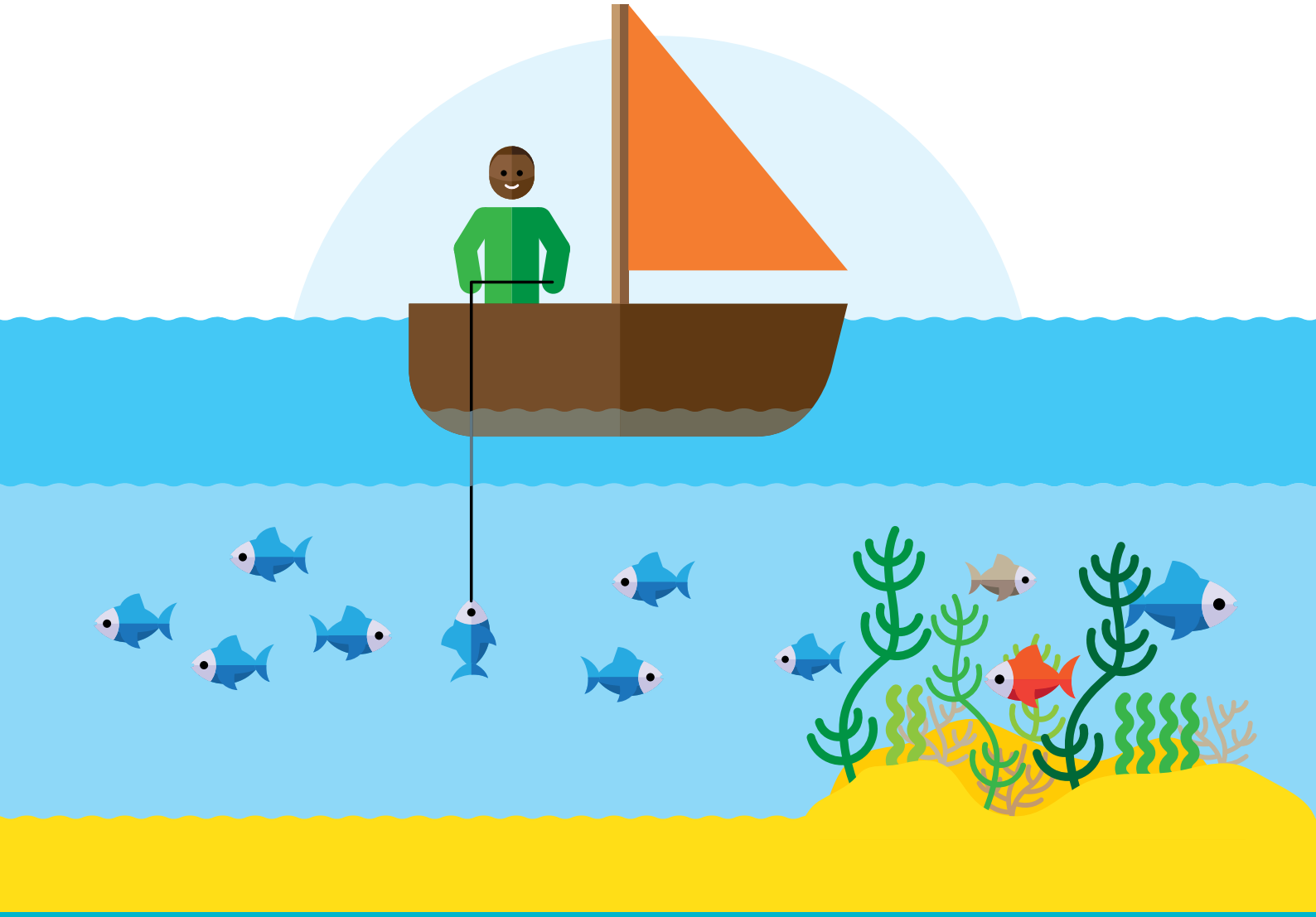


Teaching Guide 10

Fisheries and marine resources

Healthy and Sustainable Schools Programme 2nd Edition

Preface

The Healthy and Sustainable Schools Programme is a result of Sazani Associates UK and Sazani Trust Zanzibar's ongoing partnership with the Ministry of Education to improve the quality of education and learning in Zanzibar.

The project is aligned with the Sustainable Development Goals and actively supports teachers and schools in achieving Global Education Target 4.7.

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (UNSD, 2021).

Focusing on the combined importance of key skills and healthy and sustainable life skills, we have revised and updated our series of fifteen Teaching Guides to support competency based curriculum linked learning.

The teaching materials are suitable for use in the last two years of primary across the transition to the first two years of secondary school.

There are fifteen Teaching Guides in this series, themed around topics that contribute to healthy and sustainable life styles within the context of Zanzibar, as follows:

1. Why we need to eat well
2. Getting enough food
3. Keeping food safe and clean
4. Population and health
5. Water
6. Sanitation and waste
7. Tourism
8. Biodiversity
9. Agriculture
10. Fisheries and marine resources
11. Energy
12. Land transport
13. Land use
14. Climate change
15. Participatory action learning

Each Teaching Guide is themed and contextualized to bring Zanzibar and contrasting localities into a classroom setting and to make learning engaging and relevant to local livelihoods. Activities are gender responsive, participatory and proven to support numeracy, literacy, English language and critical thinking.

For more information please visit our website **www.sazani.org**

Acknowledgements

This series of fifteen Teaching Guides has been adapted from Sazani Associates HSSP topic books by Rajab S. Ali, Safia M. Abdalla, Mwanawije M. Makame, Patrick Rutledge, Nicola Shone, Joshua Shawe and Rashid O. Shehe, with editorial review by Marilyn James and Dr Cathryn MacCallum. Graphic design and layout by Seven Six Design.

Contents

1 Introduction

The learning content and activities in this Teaching Guide have been designed to be easily integrated across the curriculum. Throughout the resource, knowledge, skills, attitudes, and values are interlinked and are built into all the topic areas addressed.

We have revised and updated our series of fifteen Teaching Guides to support competency-based, curriculum linked learning and development by focusing on the combined importance of key skills including numeracy, literacy, critical thinking and English language for healthy and sustainable lifestyles. The teaching materials are suitable for use in the last two years of primary across the transition to the first two years of secondary school.

There are different methods of displaying this information, through text, tables, diagrams, images and activities. Each activity includes icons to illustrate which curriculum area and which key skills are used as summarised in the tables below.

Key skills				
Numeracy	Literacy	Critical thinking	English language	Creativity
				

Activity / STD V-VI	Maths	English	ICT	Civics	Geography	History	Science	Religion	Arabic
Big beach clean up		X			X	X	X		
Shell identification	X	X			X	X	X		
Beach art		X			X		X		
The local beach scrapbook				X	X	X	X		
Blast fishing debate		X	X	X	X	X	X	X	X
Fishing in Zanzibar and commercial techniques		X			X		X		
Blue economy discussion		X		X	X		X	X	X
How much seafood do we eat?	X	X	X	X	X	X	X	X	X
Life as a fisher		X		X	X	X	X		

Activity / Form 1-2	Maths	English	ICT	Civics	Geography	History	Biology	Chemistry	Physics	Religion	Arabic
Big beach clean up		X			X	X	X	X			
Shell identification	X	X			X	X	X	X	X		
Beach art		X			X		X				
The local beach scrapbook		X		X	X	X	X				
Blast fishing debate		X	X	X	X	X	X			X	X
Fishing in Zanzibar and commercial techniques		X			X		X				
Blue economy discussion		X		X	X	X	X			X	X
How much seafood do we eat?	X	X	X	X	X	X	X	X	X	X	X
Life as a fisher		X	X	X	X	X	X	X	X		

2 Topic overview

Key words

Fisheries: the enterprise of raising or harvesting fish and other aquatic life.

Income: a gain usually in money that comes in from labor, business, or property.

Employment: the state of having paid work.

Territorial waters: the waters under the jurisdiction of a country, especially the part of the sea within a stated distance of the shore.

Shore: the land along the edge of a sea, lake, or other large body of water.

Artisanal fishers: are various small-scale, low-technology, low-capital, fishing practices undertaken by individual fishing households.

Fisheries refer to the industry by which we catch fish and other marine organisms such as octopus and lobsters. This industry has formed part of the life for the people of Zanzibar and continues to make important contributions to the socio-economic development of the country, providing income to more than 20% of the population.

3 Importance of the fisheries sector in Zanzibar; and Tanzania in general

- Fishing has traditionally been a sector employing a significant number of people, for example in 2014 the sector employed 183,800 full time fishers and about 4 million people earn their livelihoods from fishery sector related activities.
- It has been an important source of food providing the population with essential animal proteins, it provides macro-nutrients such as protein, lipids, carbohydrates, and wide range of essential amino and fatty acids. In addition, fish oils are known for their high efficacy in abating cholesterol and therefore minimizing cardiac arrests. The sector contributes to about 30% of total national animal protein consumption that control nutritional disorders such as Marasmus and Kwashiorkor.
- According to the Economic Survey Report of 2014, the fishing sector has been growing at a rate of 5.5% and contributing 2.4% to the GDP.
- In 2005, fishing produced around 20,000-25,000 tons of fish. The annual capita consumption of fish is about 21kg per year, which is considerably more than the average annual per capita consumption of red meat which is around 3 – 4kg per year.

3.1 What makes fishing an important economic activity in Zanzibar?

Zanzibar has 12-miles of territorial waters surrounding the Zanzibar islands.

Most fishing activities take place within 5 miles from the shore because fishing boats are mostly small. There are approximately more than 24,000 artisanal fishers (who engage in small-scale, low-technology or subsistence fishing practices).

In Zanzibar there are more than 5,200 fishing boats which dock on the 250 or so fish landing sites. Once the fish is brought to the landing sites, it is auctioned off there and then to the 3,000 or so fish traders who transport the fish to local markets in towns and villages. Most, if not all the fish caught are consumed in Zanzibar.

4 Fishery resources

Key words

Reef fish: fish which live amongst or in close relation to coral reefs.

Pelagic fish: Pelagic fish live in the pelagic zone of ocean or lake waters – being neither close to the bottom nor near the shore – in contrast with demersal fish that do live on or near the bottom.

Fish stock: The living resources in the community or population from which catches are taken in a fishery.

Fishing fleets: an aggregate of commercial fishing vessels.

Non-motorized boat: a boat not equipped with a motor.

Habitat destruction: the process by which a natural habitat becomes incapable of supporting its native species.

Marine resources: are materials and attributes found in the ocean that are considered to have value.

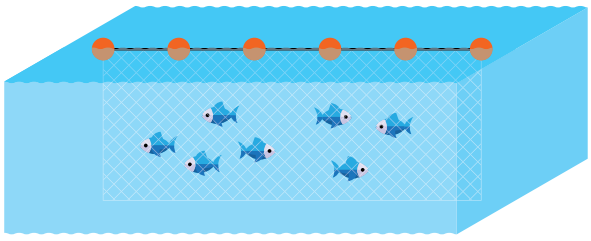
Environment: the surroundings or conditions in which a person, animal, or plant lives or operates.

Monofilament netting: netting that is made from a single filament string.

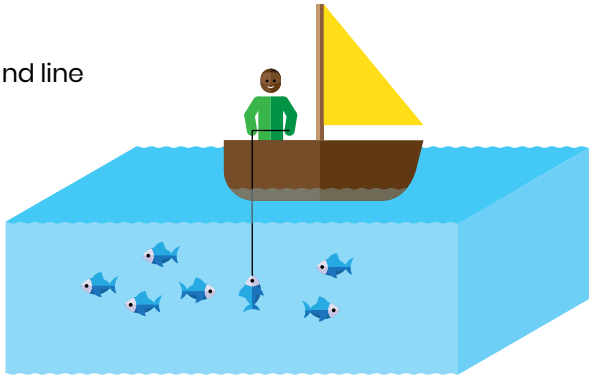
Beach seines: is a seine net operated from the shore.

Most of the fishing takes place using boats that are usually traditional hand-crafted canoes or dhows; and sailing boats. Few of them have planked outboard engines. The fish stocks are harvested by using traditional or artisinal techniques practiced by local people and the method of catching fish varies, including using fishing gears such as purse seines, gill nets, drift nets, scoop nets, hand lines, traps, and weirs. Sardines and anchovies are usually caught using nets whereas hand lines are used to trap pelagic fishes.

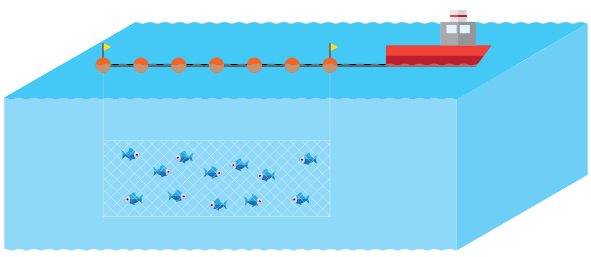
Gill net



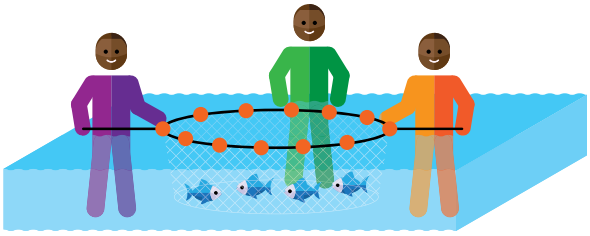
Hand line



Drift net



Purse seines



4.1 The fish stock in Zanzibar

Octopus	The octopus is a soft-bodied, eight-limbed mollusc. Is caught mostly by local fishermen who go out on foot on coral reefs or in shallow inshore waters, and by divers.	
Sharks	Sharks are a group of elasmobranch fish characterized by a cartilaginous skeleton, five to seven gill slits on the side of the head and pectoral fins that are not fused to the head. They were traditionally caught using gill nets and by hook and line, further offshore.	
Deep-water lobsters	Have long bodies with muscular tails. Three of their five pairs of legs have claws, including the first pair which are usually much larger than the others. They are regularly caught in depths of between 250m to 320m at the southern end of the Zanzibar channel. Lobsters are one of the few resources that have not been subject to exploitation.	
Crabs	They live in the world's oceans, in fresh water and on land. They are generally covered with a thick exoskeleton and have a single pair of pincers.	

Prawns	Prawns is a common name for small aquatic crustaceans with an exoskeleton and ten legs, have branching gills, with the front pair being noticeably larger.	
Seaweed / sea vegetables	These are forms of algae that grow in the sea. There are a food source for ocean life and range in colour from red to green to brown to black. Seaweed grows along rocky shorelines around the world, but it is most commonly eaten in Asian countries such as Japan, Korea and China.	
Sea cucumber	Sea cucumbers are a class of echinoderms, they are called sea cucumbers because of their cylindrical shape and the presence of bumps all over their bodies. In Zanzibar, they are usually harvested for export where they are used in the cosmetics industry as well as being a delicacy in eastern markets.	
Oysters	Is the common name for several different families of salt-water bivalve molluscs that live in marine or brackish habitats. In some species, the valves are highly calcified, and many are somewhat irregular in shape.	

4.2 Fishing areas in Zanzibar and Tanzania:

Tanzania mainland

Some of the areas where fishing activities taking place in Tanzania mainland include Bongoyo, Mbudya, Pangavini, Funguyasini, Sinda, Makatube and Kendwa situated in Dar es salaam, Maziwe (Pangani), Nyororo, Shungimbili and Mbarakuni (Mafia), Kwale, Ulenge, Mwewe and Kirui in Tanga.

Zanzibar

The most areas where fishing activities take place in Unguja Island include Nungwi, Matemwe, Kendwa, Mkokotoni, Tumbatu, Bumbwini, Pwani Mchangani, Fukuchani, Kiwengwa, Michamvi, Kizimkazi, Paje, Bwejuu, Uzi, Chakwa, Unguja Ukuu, Marumbi, Pongwe, Uroa, Malindi, Kizingo, Mbweni and Fumba.

On the part of Pemba Island, the areas consist of Makoongwe, Makombeni, Wambaa, Kisiwa Panza, Michenzani, Mtangani, Kangani, Kengeja, Mwambe, Chambani, Tumbe, Makangale, Kojani, Nsuka, Mtambwe, Kangagani and Wete.

Most reef fish, large pelagic, lobsters and shrimps are found around the Pemba Island whereas small pelagic are more abundant around Unguja.

Research indicates that there is significant tuna stock available within Zanzibar's territorial waters and the 200-mile EEZ. Given that they are few foreign fleets operating in the area and most fishing boats are non-motored small boats, this vast area has been underutilized.

4.3 The impact of fishing activities on the environment

1. The use of dynamite as a way of killing fish has tremendous negative impact not only on the marine resources but also in the environment including habitat destruction.
2. Fishing using illegal gears such as under mesh size, monofilament nets, beach seines and other destructive gears and practices has greatly contributed to resources and environmental destruction which if not well addressed may lead to resource depletion.
3. Legal fishing includes authorised fishing conducted in the right gears, place, time and manner. Trading in illegal fish, including immature fish, promotes destruction of the resource base.

5 Seaweed farming

Key words

Seaweed farming: the practice of cultivating and harvesting seaweed.

Foreign markets: any markets outside of a company's own country.

Fertiliser: a chemical or natural substance added to soil or land to increase its fertility.

Feed additive: an additive of extra nutrient or drug for livestock.

Marine reserves: a type of marine protected area that has legal protection against fishing or development.

Coral reefs: a ridge of rock in the sea formed by the growth and deposit of coral.

Mangrove forest: Mangroves are a group of trees and shrubs that live in the coastal intertidal zone.

Overexploited: larger numbers than can be replaced are being taken.

Juvenile fish: fish not yet reached maturity.

Cod: a cold water fish which provides an oily extract used as vitamin supplement in the past.

Fishing quota: amount / number allowed to be caught or taken.

Seaweed farming has become an important industry in recent decades and is a significant export-earning contributor, exporting 12,000 tonnes to foreign markets in 2011 compared with 3,000 tonnes in 1995. It has become a widespread activity in Unguja and parts of Pemba, employing thousands of people including women who account for around 80% of coastal farmers in Zanzibar.

Seaweeds farms are generally located in shallow, calm and warm waters of between 25 and 30 degrees centigrade and where the bottom part of the water is sandy. Seaweed is used as an ingredient in the food and cosmetic industry as well as being a fertilizer and an animal feed additive.

5.1 Over-fishing: a serious long-term problem for future generations

We must be careful how we use our marine resources if they are to last for many more years and continue to be enjoyed by local communities. There are already signs that the yellow fin tuna, a high value fish, may presently be overexploited and the authorities are being advised to tightly control harvest levels.

It has also been noted that juvenile fishes are being taken in increasing numbers. This may have an impact on the entire population if they are not being allowed to reach maturity.

5.2 What is being done to protect fish reserves?

Marine parks are increasingly being developed around the world, and in the Indian Ocean, a number have been set up in the last five years to preserve fish stocks and other marine life.

Within Zanzibar, there are many marine reserves including the Menai bay conservation area, which is located on the southern part of Unguja island and is Zanzibar's largest marine protected area at 470 square kilometres. The bay consists of coral reefs, tropical fishes, and mangrove forests. Tourism is encouraged and supported by the government thus providing economic benefits to local villagers on the shore, some who work as guides to tourists who visit the area to see dolphins. Furthermore, the area is controlled to ensure no illegal fishing takes place.

Famous marine parks / reserves include the Chumbe reef sanctuary, also known as Chumbe Marine Park, is a privately- owned successful eco-tourism project. its aim is to preserve and develop the rich biodiversity of the coral reef. it includes an 'eco-lodge' accommodation as well as an educational center.

The Mnemba Marine Park is located 10km from Stone Town and is a popular destination for "high-end tourism". Part of the park is a 'no-touch' zone in place to allow for corals to develop to good shape.

Misali Marine Park sits across the Pemba channel and surrounds the Misali Island. Its coral reef covers 21.5 square kilometres and contains hundreds of different fish species including the endangered hump head.

7 What we have learned:

- Fish and other marine products are renewable resources if managed well.
- Fishing is today an important industry in Zanzibar, providing income to around a fifth of the population.
- Fisheries provide an important source of proteins in the local diet and young people are encouraged to review their eating habits.
- Fisheries in Zanzibar continue to use traditional fishing methods using hand crafted boat such as canoes and dhows.
- Marine resources must be used wisely if they are to sustain local communities and the economy.
- Every effort must be made so that overfishing does not become a problem, especially for future generations.

Knowledge and Skills	Attitudes and Values
Investigate the natural resources harvested by fishers; understand the impact of continued fishing on resources available.	Appreciate that fisheries resources are renewable but not infinite, and the role of fisheries in providing a healthy diet; understand the need for regulations that protect marine resources and assist in their protection.

8 Learning activities

How How How activity

Refer to the **How How How activity** detailed in the "Participatory Action Learning" book to help the student explore different ideas and concepts and challenge each other's points of view.

Activity 1: Big beach clean up

Resources required:

- Bin bags or bucket to collect waste and litter
- Camera / smartphone
- Risk assessment
- Note pad
- Pens and pencils

Set up:

Locate a suitable beach.

Conduct a risk assessment and put in place measure to ensure learners safety while carrying out field trip. This may include minimum groups sizes, a supervised safety point and a specified area that learners may be in. Please refer to the risk assessments section of the Participatory Action learning book (Teaching Guide 15).

Provide learners with a bin bag or bucket to collect waste and litter.

Learners will be asked to produce a scrapbook at the end of their beach visit so ask them to make notes about what they find.

Activity:

- Take learners to the beach and carry out a clean of the area collecting the waste and litter within a designated zone.
- Give a safety brief that includes:
- Work in groups for safety and also for assistance.
- Use Personal Protective Equipment (Have and use gloves, wear long trousers, long sleeves).
- Have a complete first aid kit and know how to use it.
- Work with bags and safely pick up debris efficiently.
- Point out any area hazards such as bodies of water or steep edges.
- Do not pick up any waste that could be hazardous such as medical waste or sharp objects.
- Leave natural items such as plants and animals alone.

Review:

The following questions or points may be used to review the activity:

- Discuss with learners where the waste they have collected has come from.
- Ask learners what steps they can take to help reduce waste and litter on beaches.

Activity 2: Shell identification

Resources required:

- Risk assessment
- Identification guides of shells (If able)
- Tray
- Camera / smartphone for photos

Set up:

Locate a suitable beach.

Conduct a risk assessment and put in place measure to ensure learners safety while carrying out field trip. This may include minimum groups sizes, a supervised safety point and a specified area that learners may be in. Please refer to the risk assessments section of the Participatory Action Learning book (Teaching Guide 15).

Mark out a designated area that learners can undertake a survey in.

Please note: Cone shaped shells may contain venomous snails capable of stinging humans, the sting is similar to a bee sting. It is important to include in a safety brief that learners are not to collect cone snail shells.

Activity:

- Place learners into groups and give them a specific time frame to go collect as many different shells as they can find on the beach.
- Once learners have collected their shells have them place them in a tray, ensure there is only one type of each shell for each group, if learners have extra, they can share them with other groups.
- Attempt to identify as many shells as possible there, identification guides made be found online or alternatively shells can be categorised generally as:
  - **Gastropods** – Snail type shells that curl around are all in one piece.
  - **Bivalves** – Shells the come in two parts, such as clams and oysters.
  - **Tusk Shells (Scaphopods)** – Tusk or tooth looking shells.
  - **Chitons** – Flattened and plated, very primitive looking.
- Once learners have successfully categorised and identified all the shells in their tray, they can swap trays and explain what they have found to other groups.
- After learners have finished looking at shells and all photos taken, have learners return the shells to the beach as spread out as possible.

Review:

The following questions or points may be used to review the activity:

- Ask learners: Why should you be careful about taking shells from the beach? (Seashells are an important part of the coastal ecosystem and provide materials for birds nest, home or attachments for other organisms. They can also alter the rate of shoreline erosion).

Activity 3: Beach art

Resources required:

- Camera
- Risk assessment

Set up:

Locate a suitable beach.

Conduct a risk assessment and put in place measure to ensure learners safety while carrying out field trip. This may include minimum groups sizes, a supervised safety point and a specified area that learners may be in. Please refer to the risk assessments section of the Participatory Action Learning book (Teaching Guide 15).

This activity should be used as part of a field trip day to the beach and can be used as a review activity for the beach clean or habitat survey (see Teaching Guide 8).

Activity:

- Place learners into groups.
- Give each group a designated area to create their land art on the beach.
- Ask learners to use driftwood, found materials and the sand to create a piece of land art. If there are no materials around learners can still shape the sand.
- This land art can be representative of their day at the beach or can be used to demonstrate their understanding around a specific topic.

Review:

The following questions or points may be used to review the activity:

- Once learners have completed their land art have each group present their art to the rest of the learners and explain what it represents.

Activity 4: The local beach scrapbook

Resources required:

- Pens and pencils
- Paper
- Notes from beach

Set up:

Ensure learners have made notes and kept them from visiting their local beach.

Activity:

- Ask learners to produce a scrap book about their visit to the local beach. This could include:
  - An account of what they did there and learned.
  - Rules about how to care for the beach (developing skills as a responsible citizen).
  - Enjoyable activities to do on a beach.
  - Beach's biodiversity.
  - Sources of pollution.
  - Any field sketches undertaken at the beach.
  - Any photos taken at the beach.
  - Fun pictures and stories from their day out.

Review:

The following questions or points may be used to review the activity:

- Have learners place their scrap books open on their desk.
- Have learners write down three awards to hand out to whichever learners' scrapbooks they feel have earned an award (examples of awards could be: Most Educational, Best Looking or Most Artistic).

Activity 5: Blast fishing debate

Resources required:

- Pens and pencils
- Paper
- Blast fishing in Zanzibar summary

Set up:

Display or hand out copies of the Blast fishing in Zanzibar Summary.

If not possible print out one copy and have learners take turns reading out sections while other learners take notes.

Activity:

Place learners into an even number of groups and set up several small debates and appoint a judge for each one with the teacher moving around the room.

- Ask each group to split in half and one half will argue in support of Blast fishing from the perspective of the fishers and the other half will argue against blast fishing from an environmental perspective.
- Either hand out the summary or have learners take notes as you read it out about the impacts of blast fishing. Each side should use the summary to help frame their arguments.
- Ask learners to follow this structure for the debate:
  - Each side will get to make an opening statement.
  - Each side will then prepare a counter to the opening statement of the other team.
  - Each side will then be able to provide a concluding statement.
- Judges can award 1 point for a good answer, 2 points for a really good answer and take away 1 point if learners talk over someone.
- After the debate the judge will decide which group won their debate and justify their reasoning.

Blast Fishing in Zanzibar Summary

Blast fishing in Zanzibar – dropping explosives into the water to fish – is a highly lucrative but hugely damaging practice, it takes only about $8 of dynamite to stun and kill 400 fish. This style of fishing ruins entire ecosystem and biodiversity by turning coral reefs into ashes and destroying all kinds of fish species. In 2015 a World Bank report described blast fishing as having reached “epidemic proportions” in Zanzibar.

Increases in mining and construction has made it easier for people to get their hands on dynamite despite blast fishing being outlawed in 1970. Cheaper and vastly more productive that traditional methods, such as basket traps and hook and line, it is also dangerous with errant blasts shattering limbs and even killing fishers. The dynamite regularly ruptures fish’s bladder – the organ that gives fish their buoyancy – meaning that the majority of dead fish sink and only those that float are collected by fisherman in nets. Researchers in 2015 counted as many as 300 explosions occurring from the Tanzania-Kenya border down to Mozambique over a 30-day period.

Beyond the environmental damage, blast fishing threatens the livelihoods of legitimate fishers, who blame dynamite for the decline in their own catches. Tourism is also affected as tourists do not wish to go to beaches where there are explosions, and the coral is systematically destroyed.

Review:

The following questions or points may be used to review the activity:

- The teacher can ask the judge of each debate to give a quick summary of the debate and declare which group won.

Activity 6: Fishing in Zanzibar and commercial techniques

Resources required:

- Black / white board
- Chalk / marker pen

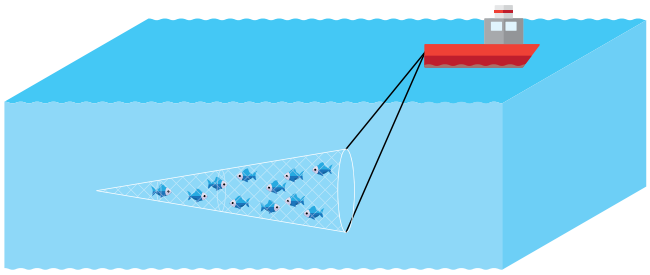
Set up:

Teachers should familiarise themselves with the three examples of commercial fishing and compare them to the example of fishing techniques in Zanzibar.

Teachers should consider how they can demonstrate each technique using the learners to act out being nets and the fish.

Three examples

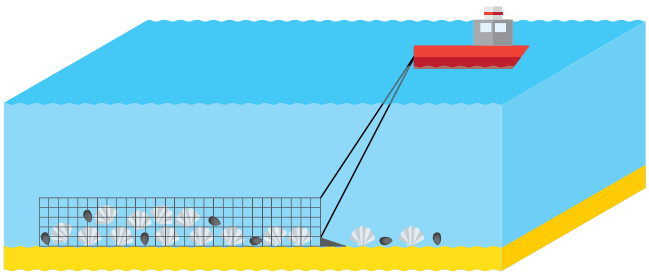
(Taken from https://britishseafishing.co.uk/commercial-fishing-methods/)



Pelagic trawling

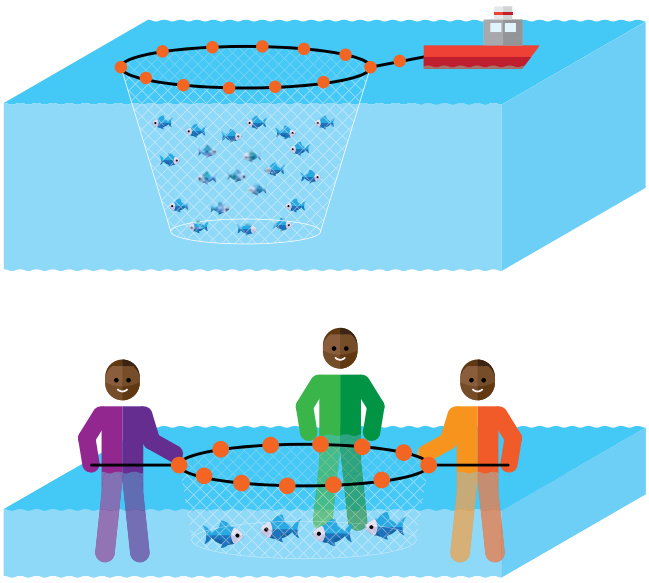
Pelagic trawling: This involves dragging a net through the middle of the water column to catch fish that feed there. They can catch huge amounts of fish. Atlantic Dawn, the biggest trawler in the world, can catch 400 tons of pelagic fish every 24-hours, and species such as jack mackerel have been fished down to a fraction of their former abundance in South American and Australian waters due to intensive pelagic trawling.

Dredging: Dredging is used to take shellfish such as oysters, mussels and scallops from the sea. Dredgers tow metal cages across shellfish beds. Metal beams or teeth are used to scrape the shellfish free from the seabed when they then fall back into the cage or into a net or bag attached to the cage. Hydraulic dredgers also exist which spray jets of water onto the shellfish to dislodge them from their location. Large vessels can drag as many as twenty cages behind them. Dredging is one of the most destructive methods of commercial fishing as it tears through shellfish beds and causing major damage. Shellfish beds that have been intensively dredged are unlikely to ever recover from the damage that has been caused to them.



Dredging

Purse seining: Purse seining is a method of fishing which is used to catch fish that are found in a shoal or school such as herring, mackerel, sardines and many species of tuna. Purse seining works by drawing a vast net around a school of fish. The net is then pursed (drawn closed at the bottom) trapping the fish inside and the net can then be pulled onto the vessel. Small-scale purse seining can be relatively low-impact as the seabed is not damaged, however, large-scale purse seining can be devastating. The biggest purse seines can use a net thousands of metres long which goes to a depth of 250 metres and use a speedboat to quickly draw the net around the fish. These kind of nets can catch up to 400 tons of small species such as jack mackerel, or a whole school of tuna. There is also massive bycatch associated with purse seining for tuna, with dolphins, whales, sharks and turtles inadvertently caught in the net and then thrown back into the sea dead once they have been brought onboard.



Purse seining

Activity:

- Demonstrate to learners the three example methods of commercial fishing techniques, this can be done by having some learners play the fish and other the net by holding hands.
- Ensure learners are rotated with each example so that everyone gets to be part of a demonstration.
- Ask learners: Can you think of any negatives for catching fish on a large scale in this way?
- Ask learners: How do these techniques compare to fishing techniques used in Zanzibar?
- Are there any similarities or differences? Write up some of the points made on the board.
- Have learners put together a report comparing the benefits and negatives of commercial fishing techniques compared with traditional artisanal fishing methods used in Zanzibar.

Review:

The following questions or points may be used to review the activity:

- Have a selection of learners present their reports to the class, if the learner makes a good point ask the class if someone else can explain why it was a good point to keep the other learners engaged.

Activity 7: Blue economy discussion

Resources required:

- Zanzibar turns focus to untapped blue economy summary

Set up:

This is a short activity that follows on from Fishing in Zanzibar activity.

Display or hand out copies of the Blue Economy Summary.

If not possible read out the summary.

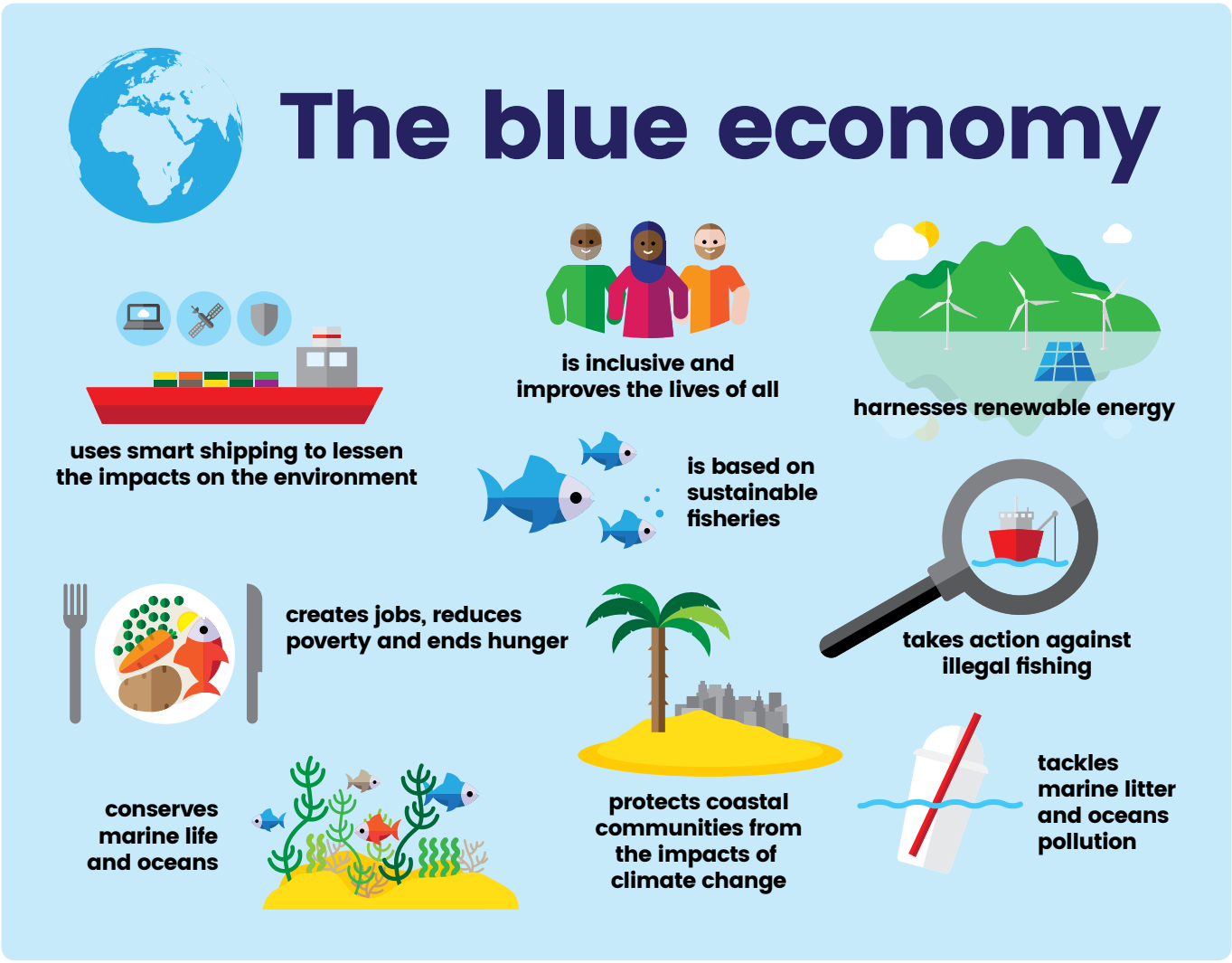
ZANZIBAR TURNS FOCUS TO UNTAPPED BLUE ECONOMY

(Summary of https://dailynews.co.tz/news/2020-01-075e149d264be27.aspx)

Despite being surrounded by water, Zanzibar remains far from successful at utilising its marine resources. The government argues inadequate fishing activities and lack of fish processing plants is holding Zanzibar back, with foreigners benefiting instead of local people.

The blue economy, which involves utilisation of all marine resources, from the coast to the deep sea is an approach that has already seen the Zanzibar government invest in constructing fish processing plants in Unguja and Pemba. This investment along with construction work on Malindi fish market is set up to create 6000 jobs for people.

Fishing is just one of many activities of the blue economy, which entails reliable marine transport, modern boats and empowered fishers. President Shien has voiced his support for the blue economy stating "We must embrace modern fishing, which entails modern fish landing, marketing and fishing vessels".



Activity:

- Hold a whole class discussion about what learners think about promoting "Blue Economy" in Zanzibar. Dependant on class size learners could be placed into smaller groups, ensure the teacher calls on random learners not just those that offer to contribute.
- What are the potential benefits and concerns? Ask learners to consider what they have learnt about commercial fishing techniques.

Review:

The following questions or points may be used to review the activity:

- Ask learners to ask their parents / guardians what they think of the Blue Economy and if they think it is a good or bad thing.
- Have learners feedback these answers the next class.

Activity 8: How much seafood do we eat?

Resources required:

- Pens and pencils
- Paper

Set up:

Display the "Meals eaten in one week" survey on the board:

Meals eaten in one week			
	Lunch	**Dinner**	**Style of cooking**
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

How many meals included fish / seafood?	/ 14
How many meals included meat and meat products?	/ 14
Which of the two groups was eaten more frequently?	
What was the reason for this?	
How many meals would you classify as healthy?	
How many meals would you classify as fat / greasy?	

Activity:

- Place learners into pairs and have them interview their partner to answer the “Meals eaten in one week” survey.
- Once they have completed their survey learners must discuss in their pairs the following questions:
  - Are there any differences between what you and your partner eat in a week? Why do you think these differences have occurred?
  - How would your diet change if overfishing occurs in Zanzibar?
  - What would you eat and where would you get it from?
- Ensure you set a specified amount of time for learners to complete the survey and discuss the questions.

Review:

The following questions or points may be used to review the activity:

- Once the time limit is up cold call on random pairs to have them feedback to the class what their answers were and what they discussed in relation to the questions.

Activity 9: Life as a fisher

Resources required:

- Fishing a way of life questions
- Risk assessment
- Camera / smartphone for photos

Set up:

Find a location with local fishers present.

Conduct a risk assessment and put in place measure to ensure learners safety while carrying out field trip. This may include minimum groups sizes, a supervised safety point and a specified area that learners may be in. Please refer to the risk assessments section of the Participatory Action Learning book (Teaching Guide 15).

Activity:

- Take learners to a location with local fishers.
- Place learners into small groups (minimum of 3).
- Ask learners to prepare the questions opposite to ask any willing fishers. Ask learners to add 2 – 3 of their own questions in addition to those present.
- Ensure learners are briefed to be polite and stay within the designated area, remind learners that if they encounter any difficulties they should return to the teacher and if anyone has an issue with learners asking questions, they can be directed to talk to discuss their concerns with the teacher.

Fishing – a way of life

Name

Age

1. At what age did you take up this job? How did you get started?

2. What special skills must a person have to become a fisher?

3. What special equipment must you have on board?

4. How do you locate the fishing banks?

5. How far do you go out?

6. Do you now have to go further out than before?

7. What is your catch made up of?

8. Do you feel that fishing brings you a decent income?

9. What has been your most exciting experience when out at sea?

10. What has been your most challenging experience when out at sea?

11. Would you recommend this job for young people just starting out?

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