

Script 42: Causes of damages to oceans and how to reverse the impact of loss of habitat in the oceans

Synopsis

Fathima and Govind, both children of small-time fishermen of coastal India, embark on an exciting adventure with their unusual friends – a dolphin and a sailfish. During their journey they discover how humans and natural causes have destroyed the ocean and its ecosystems. They also talk about how these can be controlled and reversed.

Characters:

Narrator

Fathima: 10yr old girl

Govind: 10yr old boy

Sita: A dolphin, (can be voiced over by a female)

Ola: A sailfish (can be voiced over by a male)

Script:

Aabracadabra!! (*A flash sound followed by two loud splashes*)

Narrator: And suddenly, Fathima and Govind fell into the water with a huge splash.

Fathima (*excitedly*): Wow! This really worked! We have become human-fishes, gills, fins and everything. The magic potion worked after all!

Govind(*surprised*): Is this for real? Will we really get to see this beautiful ocean from within now? I wish we don't get eaten up by the big fishes.

Sailfish: Haha, you mean the predator fishes, don't you? Don't worry my kids, Sita and I shall take you around. The ocean is our friend and loves curious visitors, and together we shall protect you both. Now, let's keep swimming!

Sita (*laughingly*): I do love the name you children have given me, you know.

Govind (*excitedly*): Yes! That was wonderfully clever of you Fathima! Dolphins are marine mammals, also called as cetaceans, hence Sita.

Fathima (*mockingly, in a formal tone*):

Thank you, Govind. Although Ola, you were so named by Govind because he thought your dorsal fin resembled coconut fronds. In tamil Ola is the word for coconut fronds.

Ola: You children are one smart bunch. Now let's dive in!

(Children shout 'yaay' in chorus, happily)

Narrator:

Much like Fathima and Govind, who were considered an odd pair of friends, the Sailfish Ola and the Indo-Pacific humpback dolphin Sita were an odd pair too. Fathima and Govind were the children of small-time fishermen on the eastern coast of India. Each dawn as they would see their respective fathers launch their small fishing boat into the sea, their hearts would fill with longing to explore this wide expanse of water that was as comforting to them as their own homes. They had lived near it for as long as they could remember. And as much as they loved playing in the sea every evening after school, they were as scared of the stories Fathima's Nani (grandmother) told them about the ferocious sea.

Fathima:

Oh Ola! We're so happy today. We have always longed to swim in the ocean like fishes and see what was in its depths. You are the fastest swimmer in the ocean and have seen so much of it. Sita is one of the most intelligent beings. I couldn't tell you how excited we were when we discovered you had special powers and could talk to us.

Govind:

Fathima, we should get back soon. Appa was mentioning something about cyclone warning these past few days. You never know....

(Sounds of lightning followed by loud thunders, sounds of heavy rain and waves crashing. Things getting uprooted and fall, sounds of destruction, a cacophony)

Govind (scared and aloud): Faathimaa!

Fathima (scared and aloud): Goooooviiiiind!

(Sounds of thunder and huge waves crashing in the ocean)

Ola(very loudly and frantically):

Govind, stick with Sita. I'll take care of Fathima. We'll meet you back here after things calm down. Sita, take care of Govind. Keep him safe.

Sita (aloud): I will. You guys take care too (**sound fades**)

(Sounds of lightning and thunder continues)

Ola(reassuringly): Don't you worry Fathima, Sita and I have battled worse. Both you and Govind will be safe, we shall get you both back home once the weather calms.

Fathima: Oh I know Ola! I'm sure no harm can come to us in the ocean when we are with either of you two. (**pensively**) I was only thinking of the others. So many people live on the coast, and depend on the ocean for their food and their livelihoods. Every time such a disaster happens, our lives get disrupted. And it seems as if it were happening with increasing frequency of late.

Ola: You are right Fathima. More than a million people depend upon fishing for their livelihoods in India alone. Besides, the Indian coasts support about 30% of the total 1.2 billion human population.

Fathima (surprised): Ola! How do you and Sita always know so many things?!

Ola: Well, you're not our only human friends, are you now?

Fathima(laughingly): No, I didn't think so. (**Thoughtfully**) You know, the elders in the village say that we have angered the ocean and that's why the ocean punishes us more often than earlier these days.

Ola: And how, according to the elders, have you all angered the ocean?

Fathima: They say that we humans are taking away from the ocean more than what it is required and that is making the ocean angry.

Ola: Well it is true that humans have been taking away from the ocean far more than what is required and is sustainable. But that isn't exactly the cause for these irregular climatic patterns. Although the real reason is also anthropogenic – which means caused by humans.

Fathima: (repeats the word slowly):

Anthropogenic? That's an interesting word. But how exactly are us humans causing these irregular climatic patterns? It is not under our control, is it?

Ola: I'll explain. First tell me have you heard about Global warming?

Fathima: Oh yes! We have heard it in school. Our teacher says that there is a lot of Carbon-di-oxide in the atmosphere and that is making the Earth hotter. But wasn't carbon-di-oxide always present in the atmosphere? And don't the plants need it to synthesize their food?

Ola: Yes, carbon-di-oxide is an important gas in our atmosphere. Plants require it to synthesize their food. But CO₂ is also a greenhouse gas.

Fathima(confusedly): Greenhouse gas? I once saw a greenhouse when we went on an excursion to the botanical gardens.

Ola: It works on the same principal. You see the glass panes of the greenhouse allows light to enter but prevent heat from escaping. This makes the inside of the greenhouse warmer than the outside surroundings. CO₂ is called a greenhouse gas because it mimics this Greenhouse Effect. It traps the heat rays entering the earth preventing their escape, making Earth warmer.

Fathima: Are you saying that CO₂ is bad for the earth?

Ola: On the contrary, CO₂ was responsible for making the earth habitable by trapping heat energy and warming the extremely cold primitive earth.

Fathima(confused): I don't understand Ola. From what you are saying, isn't warming of the earth then a natural process?

Ola: You're a smart girl Fathima. Yes, the climate on earth has always been changing, it's a natural process. But what has happened now is that humans have accelerated this process.

Fathima: How?!

Ola: By releasing more and more CO₂ into the atmosphere! CO₂ has always been released into the atmosphere through natural processes such as volcanic eruptions, forest fires and even respiration. But with the increase in the number of vehicles and industries, the levels of CO₂ have skyrocketed. This is because when these coal and fossil fuels are burned, they release CO₂. Between 1970 and 2004 alone, the amount of CO₂ in the atmosphere has increased by 80%.

Fathima: That's a huge increase.

Ola: Yes. And you can imagine the warming associated with that. During the last century, the global temperature increased by about 0.8°C, which was the largest increase in a thousand years. This rise in temperature increases both the occurrences and intensity of cyclones. But enough of that now, look where we have reached. It's the Palk Strait!

Narrator: Fathima looks around and is thrilled to find herself in a place she has only read about in her geography text book. Palk Strait, a narrow sea separating India and Sri Lanka.

Fathima (gleefully): This is so beautiful!

Ola: I can see your excitement Fathima. Be careful though, this is one of the most heavily fished regions of our country. Look out for nets and make sure you don't get caught in one of these.

Narrator: Surely enough a large net came swooshing down that Fathima was just about able to dodge. It landed right at the bottom of the ocean with a thud.

(sound of a 'swoosh' followed by a 'thud!')

Fathima (surprised): Whoa! That net is huge! Much bigger than the one Appa uses. What are they fishing for?

Ola: That is a bottom trawling net. Bottom trawlers are used to capture marine fishes that live in the bottom of the ocean. Here, they mainly use it to catch shrimps/prawns.

Fathima: It is moving really fast Ola. But look! **(alarmed)** Many fish are also caught in it! And what is it that I see there? A turtle! Why are they capturing turtles?

Ola: Remember what the elders at the village said about taking more than what is required from the ocean? This is what they meant. These large nets take away many other fish that they do not intend to catch, many times even juvenile fish and other species such as turtles too. Most of these fishes are discarded back into the ocean after they are dead because nobody buys them in the market. And because the net is dragged through the ocean floor, it destroys the habitat of so many species, often causing irreversible damage.

Fathima (*extremely sadly*):

The sea floor! It looks like a flattened road. Just moments ago it was teeming with life! (***angry and exasperated***) Why is it that they allow such a thing to continue when clearly it is so harmful?

Ola: Being a fish myself, you can see how I share your anger. It's our only homes that are mindlessly destroyed. But in reality, things are a little complicated for humans. So many people depend on this for their livelihoods that it becomes very difficult to ban them entirely. But the government has taken some steps. For instance, it bans fishing during the breeding season to allow stocks to replenish. It has also created several Marine Protected Areas.

Fathima: What exactly are Marine Protected Areas Ola?

Ola: Some areas of the oceans are more fragile than others and need greater protection since they support many unique marine ecosystems. In order to protect and conserve these, Marine Protected Areas are created. These are areas of the sea, oceans, or large lakes where human activity is more strictly regulated than in the surrounding waters. For instance, the Gulf of Mannar Marine National Park, which is very close to where we are now.

Fathima(*surprised*): There is a National Park in the sea?!

Ola: Yes indeed. Much like the National Parks on land, human activity is strictly regulated in Marine National Parks as well. India has established 31 Coastal & Marine Protected Areas (CMPAs). Even the Wildlife Protection Act offers protection to certain marine organisms.

Fathima: That's very heartening to know.

Ola: Why don't you hold on to me Fathima? I'll take you around. **(laughingly)** I see you are not very comfortable swimming in your newly acquired fish-outfit?

Fathima (giggling): I'm getting used to it.

Ola: Tell me Fathima, would you like to see coral reefs?

Fathima (excitedly): Oh absolutely!! I'd love to!

Ola (mockingly): Your wish is my command! We are approaching the Lakshadweep islands.

Fathima(surprised): But how did we get here? Even you can't swim that fast Ola!

Ola: I must confess I have had a little help from my friend, the ocean. Didn't I tell you the ocean loves curious visitors?

Narrator: They find an opening in the reef large enough for the both of them to pass, and enter the lagoon, the shallow surrounding the islands. Ola of course was uncomfortable, being unaccustomed to shallow waters.

Fathima (excitedly): The reef! It is so much more beautiful than I could ever have imagined! So much colour, such diversity, fishes of the kind that I have never ever seen or even imagined! Looking at these corals, it's hard to believe that these aren't mere colourful rocks, but living organisms housing even smaller algae in them. **(wondering)** But why do some of these corals appear pale and colorless? It's as though they are diseased.

Ola: This Fathima, is the result of coral bleaching. Did you know that there are tiny little algae live on these corals? When sea temperatures rise, such as during the El Nino in 2015, these algae are ejected from the corals. Since the corals derive their nutrition and colour from the algae, their absence makes the corals appear pale and dead. Unless the temperature returns to normal, such effects cannot be reversed.

Fathima: Is this also the result of Global warming that we discussed? It seems to be the major culprit here.

Ola: It sure is. El Nino has been linked to Global Warming, which has been altering the face of the Earth at a speed that has never happened before. And the picture isn't pretty. But there are many reasons that contribute to it. Have you also heard the elders talk about their childhood days? Do you remember them mentioning bikes, cars, factories, industries as much in those stories?

Fathima: No. Their childhood stories always have animals, trees, rivers and the ocean in them. Nani says those were their playground and playmates.

Ola: Exactly. You see, in the earlier days there was enough number of trees to absorb the excess carbon-di-oxide and keep our earth sufficiently warm. But with the increase in the number of vehicles and industries, there was also a sharp increase in the levels of CO₂ in the atmosphere. During the last century alone, the concentration of CO₂ in the atmosphere increased 12-fold.

Fathima: That's a lot of CO₂ !

Ola: Yes. And what makes it worse is that during the same period, millions of trees were cut. Trees which are a natural storehouse for carbon, were cut for economic purposes.

Fathima: So what happens to all this CO₂ then?

Ola: The ocean absorbs them. The excess CO₂ dissolves in the oceans forming a weak acid resulting in ocean acidification. This also prevents the deposition of calcium carbonate which, is necessary for the formation of corals.

Fathima: So Global Warming results in irregular climatic patters, ocean acidification and coral bleaching?

Ola: Not only that, it also melts the ice glaciers resulting in an increase in sea levels. Many islands get flooded due to this, some have even disappeared. Shorelines get eroded, beaches disappear. It is catastrophic.

Fathima (concerned): How can we prevent all this from happening, Ola?

Ola: Humans have to reduce their carbon emissions. That's the first step. Carbon-di-oxide levels are intimately linked with the lifestyle humans currently lead. So lifestyle changes are what we really need. Using electricity judiciously, opting for

public transport, switching to solar and other renewable sources of energy and following the 3Rs – Reduce, Reuse and Recycle. And most importantly Fathima, people need to be educated about the harmful effects their actions are causing on the planet.

Fathima: You are right. Most people don't even know that their simple act of leaving the light on overnight can add to such a huge problem. **(determinedly)** Ola, I'm going to talk to people and educate them about this once I get back home.

Ola: That's great! That's a good step in the attempt towards making Earth a better place for everyone.

Narrator: And Fathima and Ola continue their conversation as they swim away from the islands. Meanwhile, following their separation from Fathima and Ola, Govind and Sita had drifted away towards the Bay of Bengal. En route Sita introduces Govind to the Ocean, her friend.

Sita: Here Ocean, meet Govind, my friend from the land.

Ocean: Welcome Govind! It's a pleasure to meet you. I have many friends on the land too. But of late we have had too many visitors from land who refuse to leave and keep returning.

Govind: Visitors from the land? Who?

Ocean: Plastic for instance. Initially I would find only a few stray plastic bags or bottles drifting in the ocean, but of late their numbers have increased tremendously. They must have taken a liking to the ocean, but the problem is they cause much too harm. I've often tried sending them back.

Govind(apologetically): I'm sorry Ocean, it's not the plastic themselves but humans that are dumping all plastic and other waste into the ocean despite there being several laws prohibiting it.

Ocean (suspiciously): You too are a human, aren't you?

Govind (in all earnestness):

Yes, and I apologize to you on their behalf. It pains me to see plastic waste dotting our beautiful beaches and being dumped into the mighty ocean.

Ocean (outraged, loudly and angrily):

Your apologies do me no good child. The plastic waste dumped in the ocean causes harm to all my creatures! My turtles mistake them for jellyfish and eat them, plastic bottle caps are picked up and swallowed by birds who mistake them for their fish, turtles, dolphins and all my other beautiful creatures get entangled in your discarded fishing nets! Even after I throw all this waste back at your beaches during floods and cyclones, you keep dumping them back! Will you humans ever learn?!

(pauses for breath..and resumes again in a milder tone)

Do you know that the plastic you dump into the ocean breaks into small pieces and are then consumed by fish who mistake it for their food? Imagine what it does to their health! And when you humans consume these fish, that plastic enters your body as well. Humans are creating a path towards their own destruction.

Narrator: Govind hung his head down in shame. He had nothing to reply to the Ocean. He knew that everything that the Ocean said was in fact true.

Ocean (*kindly*): But you seem to be a nice boy Govind. You promise to go back and tell people about it? Try and prevent them from continuing this practice?

Govind (*eagerly*): Yes, O mighty ocean! I promise I'll tell people about all the harm our dumping of waste into the ocean causes.

Ocean (*in a fatherly tone*):

Well, that's good then. Now off you go!

Narrator: And the ocean carries them further into the Bay of Bengal.
sound of waves

Govind (*excitedly*): Have we reached the Andaman and Nicobar islands?!

Sita: Absolutely right! And I bet you guessed that because of the corals that you see? That's the most distinct feature everybody associates with the Andaman and Nicobar islands. But did you know that they also have dense mangrove forests?

Govind: Really?! That's wonderful! We learnt at school that Mangrove forests act as natural barriers against erosion,

flood and tsunamis, and also act as breeding ground for several fish species.

Sita: Yes. But mangroves have been under extreme threat. Mangroves forests have been cleared for agriculture, aquaculture and urbanization purposes. Even global warming has adversely affected them. Rising sea levels have inundated 7,500 ha of mangroves in Sundarbans National Park.

Govind: That's really sad to hear Sita. I hope there are laws to protect. I'll be sure to find them out when I reach home.

Sita: Okay, brace yourself, we are leaving from here. The ocean is going to carry us.

(a swooshing sound)

Narrator: And both Sita and Govind are carried off by the ocean to the western coast of India. What a surprise when Sita detects Ola in the vicinity and the two odd pairs of friends are reunited once again. They are each extremely happy to see the other, and together they again set out to explore more of the ocean.

Fathima (sadly): Govind, things aren't really as we had imagined them to be, are they? There is so much wrong that is being inflicted on the ocean.

Govind: Yes Fathima. The ocean is beautiful and filled with wonders, but it is slowly getting destroyed. **(suddenly excitedly)** Hey look, what is that there close to the coast? It looks like a coloured stream inside the sea!

Narrator: Both Fathima and Govind, eager to see what more wonders the ocean had in store for them rush towards what appears to be a weirdly coloured stream in the middle of the sea, even as Sita and Ola try to stop them.

Sita: Kids! Not there!

Fathima (disgustedly): Ewww! **(angrily)** Govind! This is no river! It is slick, coming out of these pipes.

Govind (disgustedly): Yikes! I'm covered in slime!

Sita (*laughingly*): If only you guys had listened to us. Coastal cities are also the most industrialized areas. The “river” (*mockingly*) you guys just bathed in, is the waste from the tanneries being discharged into the ocean.

Fathima (*surprised*): All this waste being sent into the ocean?

Sita: Not only this. There are thousands of such tanneries and other industries that line the entire coast of India, all discharging their treated and untreated waste into the ocean. Add to this, the sewage from many coastal cities that also eventually find their way into the ocean.

Govind: And all this is legal?

Ola: Well, not really. India has several laws such as Coast Guard Act, Merchant Shipping Act, Water (Prevention and Control of Pollution) Act, all to prevent marine pollution. But often it is not the absence of law but the lack of its implementation that is responsible for all this.

Sita: Not only does this waste pollute the marine water, it also makes it uninhabitable for fish and other organisms. Remember the oil spill at the Sunderbans in 2014? That led to the deaths of several marine species such as otters and the Irrawady Dolphins too.

Narrator: The four continue to move in the ocean, discussing various things and encountering delightful creatures. The ocean carries them back towards their home coast where the storm has subsided and everything is calm again.

Ola: Look, there’s a research vessel there. You guys better get close to it, the people on board will pick you up and take you back home.

Sita: We’ll miss you both!

Fathima: We’ll miss you too!

Govind: We’ll see you soon!

Narrator: The researchers aboard the vessel are astounded at the sight of these two children swimming towards them. They are back in their original human forms. The children are quickly taken on board, given food and water and fresh clothes to change into. Everyone is eager to hear the story

of how two young children braved the storm and emerged alive. One particular researcher, Nancy, notices that the children are exhausted and sends everyone away.

Nancy*(in an authoritative tone)*:

Hush all of you now! Don't you see the kids are tired? There is plenty of time for questions. For now, leave them alone. Let them rest.

Fathima:

Thank you. We are indeed exhausted. But we are also curious to know something Nancy Akka (sister).

Nancy:

What is it that you want to know?

Fathima *(exasperated)*:

We want to know why is it that we humans are destroying the ocean even though our very lives depend on it. The manner in which we fish and take away everything from the ocean, the way we dump all our plastic and every other waste into the ocean as if it were one large dustbin. Why is nothing being done by the authorities to prevent this and protect our ocean?

Narrator:

Nancy is surprised to see someone as young as Fathima so agitated, knowledgeable and protective about the ocean. Curious as she is to know, she chooses to answer the question first.

Nancy:

It is true that humans, because of their activities, are either knowingly or unknowingly destroying the ocean. But there are many measures that have been taken to protect and preserve them.

Govind:

Measures such as?

Nancy:

For instance, the Wildlife Protection Act and Forest Conservation Act, that offers protection to marine biodiversity. Or the Marine fishing Regulation Act that regulates the mesh size for nets, declares seasons that are closed for fishing. There are laws in place.

Govind *(talking as if to himself rather than others)*:

It's like Ola said, "It's not the absence of laws, but the absence of implementation".

Nancy:

Sorry, 'who' said that?

Govind (*nervously*): No one. I read it somewhere, I can't remember where.

Nancy: (*suspiciously*) Okay. (*in a serious tone now*) But there is another side to it. We always talk about laws and implementation, but we forget that the oceans are not the responsibility of the authorities alone. It belongs to all of us and so all of us are responsible for its well being. Conservation requires active public participation through education and awareness campaigns to implement the existing laws. People have to come together to save this resource that has forever provided them their livelihoods.

Fathima: Absolutely right Nancy Akka. People, authorities, scientists, everybody should work together to protect the ocean. But there is so much of the ocean that we do not know or understand!

Nancy: That is true. Although new technologies and tools such as satellites, drifters and unmanned submersibles are helping us understand the ocean better. Scientists from different fields- biology, chemistry, climatology, engineering, geology, computer programming, animation are all collaborating together to understand more about the ocean.

Govind: "In the end we will conserve only what we love; we will love only what we understand". I read it in a book once.

Nancy: It is a very famous quote. And very true. Which is why, it is very important to study and understand the ocean. Take for example Integrated Coastal Zone Management, a project financed by the World Bank which aims to support knowledge generation and building of skills required to protect the oceans. It focuses on all aspects of coastal ecosystem, from mangroves, to livelihoods, pollution control and monitoring and even sewage treatment.

Fathima: So all is not as gloomy after all. Things will change for the better.

Nancy: It sure will, if everybody understands the need for it and works together.

(After a pause)

But now, tell me this. I want to know how is it two young children braved this storm and survived unharmed in the middle of the sea.

Narrator: Both Fathima and Govind cautiously look at each other and then at Nancy.

Fathima (*sleepily*): Nancy Akka, we really are tired. Could we not talk about this tomorrow? Please?

Nancy: Alright. Since you say you are tired, I'm going to let you rest. But tomorrow, tomorrow I want to know the entire story. Okay? Now give me the contact numbers of your parents, I'll call them and inform that you are both safe.

Fathima and Govind: Okay.

Narrator: And both Fathima and Govind, truly exhausted with their extraordinary adventure drop into their beds and slowly drift into sleep. Their minds processing all the wondrous beauty and mindless degradation that they witnessed, their hearts remembering the promises that they made to safeguard the ocean and their brains wondering what story they would come up with to mask this incredible ocean-adventure of theirs.