

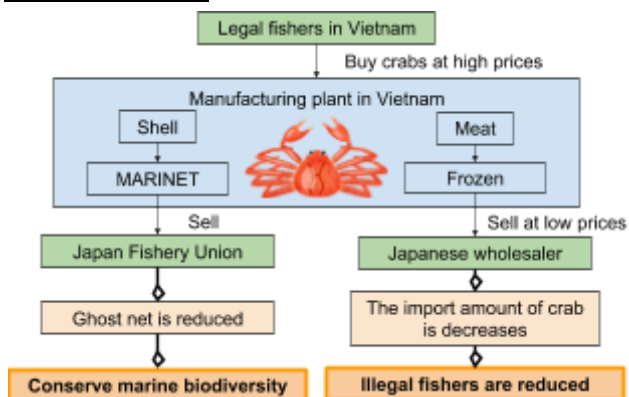


## #24 HG Theoria

### Executive Summary

HG Theoria is a company that aims to globally reduce IUU (Illegal, Unreported, Unregulated) fishing and manage fisheries sustainably through the creation of our product, "MARINET". This is a light and compact fishing net that is made of crab shell biodegradable plastic, which goes against ghost fishing and helps to conserve marine biodiversity. We will buy the crabs from legal Vietnamese fishers and manufacture the net in Vietnamese factories, transport that to Japanese headquarters, then sell the nets to fishermen and the crab meat to buyers in Japan. We will mainly advertise our product through newspapers and radios to appeal to the fishermen.

### Business Model



Our company aims to end IUU fishing by increasing the number of legal fishermen in Vietnam. We will pay higher prices to buy crabs from legal fishermen so that they will benefit more than illegal fishermen. IUU fishermen ignore the laws and rules because they gain higher profits by doing so. Therefore, if we pay legal fishermen with a higher wage than illegal fishermen, more fishermen will find the legal method attractive and will lead to an increase in legal fishermen.<sup>1</sup> The increase of legal fishermen will help to decrease the number of IUU fishing and the fishermen from developing countries, such as Vietnam, will also have a higher wage managing fishery sustainably. After purchasing the crabs from the legal fishermen we will separate the crab shell and the crab meat at a factory in Vietnam. The crab shell will be processed to make a new type

of fishing net, the MARINET, and the crab meat will be packed and sold to buyers in Japan. The MARINET will be processed in Vietnam due to the cheap personnel expenses compared to Japan and will later be used by Japanese fishermen, adding on to the conservation of marine biodiversity.

We have chosen Vietnam because it has been issued a yellow card in 2017 by the European Commission, showing the prevalence of illegal fishing there.<sup>2</sup> In addition to the fact that Vietnam is one of the biggest country conducting IUU fishing, it is also ranked fourth in the world for the highest amount of crabs caught and produced.<sup>3</sup> Vietnam is a developing country still in progress of preventing IUU fishing and is also close to Japan, making it easier for us to transport our product between the two countries. As a result, Vietnam is suited for our business model and will be an appropriate place to start our business.

### What is the MARINET?

MARINET is an eco-friendly fishing net created by crab shells. MARINET is designed to tackle the problem of ghost fishing; the fact that fishing nets make up almost half of the plastic waste in the ocean. Fishers often throw their nets away after catching the fish because it creates more space on their boat to store fish. Therefore, MARINET is light and compact, reducing the need to throw nets out after use. In addition, MARINET is made of biodegradable plastic made by crab shells, which allows it to decompose fully from 3-6 months, which is more than 100 times quicker than their synthetic counterparts. This reduces the risk of fish getting caught in the nets and works to conserve marine biodiversity.

### How is the MARINET made?

The MARINET uses bioplastic as its main raw material and we have taken notice of chitin nanofiber as an applicable new technology developed by Shinsuke Ifuku et al . Chitin nanofiber inside the shell of crabs can be used by using acid to neutralize and alkaline to solubilize the calcium and protein inside the crab shell. The chitin nanofiber will then be easier to wet, crush, and isolate for use.<sup>4</sup>

Chitin nanofiber is 1/3 the lightness of steel and 5 times tougher so it is also used as reinforcing fibre.<sup>5</sup> By building this chitin nanofiber into bioplastic, we are able to make a lighter and tougher fishing net than conventional ones. In addition, chitin nanofiber and bioplastic are both biodegradable so this newly

<sup>1</sup><https://worldoceanreview.com/en/wor-2/fisheries/illegal-fishing/>

<sup>2</sup><https://www.seafoodsource.com/news/supply-trade/european-parliament-delegation-visits-vietnam-to-study-efforts-against-iuu-fishing>

<sup>3</sup>[https://www.globalnote.jp/post-2864.html?cat\\_no=207](https://www.globalnote.jp/post-2864.html?cat_no=207)

<sup>4</sup>[https://katosei.jsbba.or.jp/view\\_html.php?aid=411](https://katosei.jsbba.or.jp/view_html.php?aid=411)

<sup>5</sup><http://www.marine-nf.com/applications>

combined material will not harm marine animals even if it is thrown away as ghost nets and will help to protect marine biodiversity.

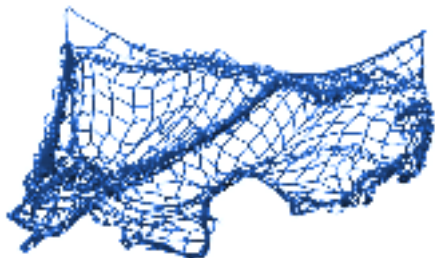


Fig1. MARINET image model

**Marketing and Target**

Although IUU fishing is more common in developing countries than in developed countries, it is impossible to sell our product to developing countries because our product will use the latest technology. Therefore we decided to sell MARINET to fishermen in Japan, one of the developed countries, as the first target of our business. Because our company is a Japanese company and we use the technique of producing chitin nanofiber invented by the Japanese company, it is easier to sell our product to domestic fishermen. We also set our target to Japan because it consumes a lot of crab meat. Japan also has the second highest percentage of seafood.<sup>6</sup> imports. By selling crab meat cheaper than usual crab meat imported, Japan will be required to import fewer crabs which declines the overall risk of importing crabs caught by IUU fishing.

The best two ways to promote our product to Japanese fishermen are using radio broadcasting and posting advertisements in newspapers. Because radios are portable, fishermen have more opportunity to hear our advertisement than on TV. We decided to use newspapers because many Japanese fishermen are more familiar with the newspaper than online articles.

**Financial Plan and Fundings**

Our company will be funded by three major agencies. The first agency will be the factory in Vietnam used to process the crab meat in order to export to Japan. This factory will fund our company and we will have a partnership so our company will pay for the wages of the factory workers and the Vietnamese factory will provide us with the processed crab shell and meat.

To make the plastic from crabs, we will get the extract needed from two companies: “Omuratoryo Co. Ltd” and “Marine nano-fiber Co. Ltd”. Because these companies own the patent for

the crab bioplastic, we will need to give them 6% of our profits.<sup>7</sup>

Lastly, our company will be funded by “Nitto Seimo Co., Ltd.” and “Kinoshita Fishing Net Mfg.Co., Ltd.” These companies have the biggest share over fishing nets in Japan. Because Nitto Seimo has half of the domestic share in Japan, producing the MARINET together with these companies both will benefit them and HG Theoria.

Our main sponsors will be Showa Note Corporation. This company creates “Japonica study notebooks”<sup>8</sup>, which aims to raise awareness about environmental problems through study notebooks for children. They have different types of notebooks that promote awareness about the “natural environment” and the “wonders of food”. Information about IUU fishing and the damage it has on marine biodiversity will be displayed in the “natural environment” notebooks, and how crab can be used to make bioplastic will be in the “wonders of food” notebooks. Here is our financial plan for over three years:

(YEN)	N	N+1	N+2
Revenue	25,397,662	26,213,647	26,417,644
MARINET price per unit	16,000	16,100	16,200
Crab meat price per 1kg	3,000	3,100	3,200
MARINET units sold	1,530	1,600	1,690
Crab meat weight sold (kg)	30,599	40,000	41,000
<b>Production Cost</b>	<b>2,233,765</b>	<b>2,310,684</b>	<b>2,845,341</b>
<b>Crab unit cost</b>	<b>4,380</b>	<b>4,380</b>	<b>4,380</b>
<b>Staff Salaries</b>	<b>2,250,000</b>	<b>2,250,000</b>	<b>2,250,000</b>
<b>Sales &amp; Marketing</b>	<b>25,398</b>	<b>25,898</b>	<b>26,398</b>
<b>Rent</b>	<b>3,640,000</b>	<b>3,360,000</b>	<b>3,336,000</b>
Profit/Loss Before Tax	-	7,864,094	7,925,293
<b>Income tax</b>	<b>7,619,299</b>	<b>8,337,295</b>	<b>7,925,290</b>
Net Profit	4,119	8,591	15,687
<b>Start Up Cost</b>	<b>60,000</b>	<b>0</b>	<b>0</b>
Funding Required	90,000	0	0
Cash Balance	250,000	260,000	350,000

**Conclusion**

HG Theoria believes that IUU fishing is a serious problem that endangers the natural marine biodiversity and increases criminal activity. Therefore, we have set up our business to not only produce a product that will help to solve the problem of ghost fishing and endangered marine life but will also help to decrease criminal activity by eradicating poverty in legal fishers.

<sup>6</sup> <http://www.fao.org/3/i9540en/i9540EN.pdf>, p55, table16

<sup>7</sup> [https://jstore.ist.go.jp/nationalPatentDetail.html?pat\\_id=32352](https://jstore.ist.go.jp/nationalPatentDetail.html?pat_id=32352)  
<sup>8</sup> <http://www.showa-note.co.jp/japonica/feature/html/persistence.html>