



Goods and services tax (GST) reforms and implementation: An economic analysis in the marine fisheries sector of Kerala, south India

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ABSTRACT

Goods and services tax (GST), hailed as a historic tax reform, is a step taken by Government of India to improve transparency and accountability in the taxation system of our country. The fisheries sector is also expected to have a varied impact consequent to the introduction of these reforms. The present study assessed the level of awareness and perception of impact of GST and to estimate the additional cost per annum in marine capture fisheries sector of Kerala due to implementation of GST and also to highlight the possible positive effects of inclusion of diesel price under GST. The study was undertaken in the fish landing centers/harbours of Alappuzha and Ernakulam districts of Kerala, south India aimed at measuring the extent of uncertainty generated by introduction of GST. The study revealed that the implementation came as a complete bolt from the blue with majority of the fishers in disagreement with the process of implementation of GST without taking all stakeholders into confidence. Compared to value added tax (VAT), the GST and post-Guwahati Council GST rates are found to be high, affecting the fishing community at multidimensional levels. The results revealed that the marine capture fishing operations across all sectors in Kerala will be incurring an additional cost of ₹171.25 million per year due to GST introduction. However introducing GST on fuels will lead to a reduction of diesel price by 30-40% and 25-30% at 18 and 28% GST slabs respectively, which would reduce the ever increasing cost of fishing. The study also advocates that the implementation of GST in fuel prices should not add to overexploitation of the already dwindling fisheries resources.

Keywords: Fishermen, Goods and services tax (GST), Harbour, Livelihood, Tax

Introduction

Taxation system had been prevalent from time immemorial, originated from Egyptian dynasty to a predominant *corvee* and *tithe* (David, 2004) and now the value added tax (VAT) followed by goods and services tax (GST). Different countries have different taxation systems and more than 140 countries have implemented VAT / GST. France is the first country to introduce GST in 1954 which was very early compared to India (Kour *et al.*, 2016). Goods and services tax, a historic tax reform, which came into effect from 1st July, 2017 in India is a comprehensive, multi-stage, destination-based tax that will be levied on every value addition. In simple words, GST is an indirect tax levied on the supply of goods and services. GST law has replaced many indirect taxes like central excise duty, services tax, additional customs duty, surcharges and state-level value added tax that previously existed in India and will be administered together by the Centre and States (Chandra and Panwar, 2018). The GST regime operates across five tax slabs which include 0, 5, 12, 18 and 28%. Under the GST regime, tax will be levied at every point of sale. Before GST, tax on tax was calculated and tax was paid by every purchaser including the final consumer. The taxation on

tax often termed as the cascading effect of taxes is avoided in the GST taxation process.

Fisheries sector provides livelihoods and subsistence to fisher community and always attracted the attention and consideration of the government. Considering it as a main livelihood option, fish, fish products and fishing inputs were exempt from commercial taxes by almost all coastal states in India. However, over the years, the modernisation of fishing paved the way for introduction of new fishing technologies and taxes were also introduced on boats and engines. The other items were always outside the regime of commercial taxes. The Non-Governmental and community based organisations (NGOs and CBOs) and co-operatives working in the sector also enjoyed exemption of taxes in the supply of fishing inputs. When the VAT was introduced in 2005, no new taxes were introduced but the tax rates were marginally increased on taxable items. These exemptions helped the 14 million fishery dependent (directly or indirectly) individuals to meet their livelihood expenses.

The marine fisheries sector already grappling with constraints including rising fuel prices, dwindling fish stocks, exploitation by middlemen, climate change,

reduced catch per unit effort (CPUE) and lower landings, now face a new challenge of further increase in operational costs due to GST introduction. Impact of GST on Indian agricultural and fisheries sectors were reported by various authors (Sheetal *et al.*, 2016; Vandna and Anil, 2017; Kumar, 2017; Ramya, 2017; Nandakumar, 2017). According to Vandna and Anil (2017), the changes in taxes due to introduction of GST in the fisheries sector would result in inclusion of the existing non-taxable items such as fish products, fishing equipment like nets, hooks and ropes under taxable category, as well as including some of the items under the highest category of 28% tax. Fishing hooks, fishing rods, fishing tackles and fishing twines are taxable at 12% under GST while that on fishing ropes has been fixed at 18%. All these fishing gear were exempt from tax under the VAT regime. The GST rate for fishing vessels has been fixed at 5% and the same rate was levied under VAT. Outboard motors and ice boxes that had a VAT rate of 14.5% now attract a GST of 28% and 18% respectively. The GST rates introduced in the marine fisheries sector have increased the cost of the fishing implements and thereby reducing the income of fishermen. There is no denying the fact that the fishermen spend a major portion of income annually for replacement of fishing inputs and the levying of new taxes at very high rate will take away a major portion of his income as taxes (Sheetal *et al.*, 2016). In this context, a study was conducted in Kerala State to assess the level of awareness and perception of impact of GST and to estimate the additional cost per annum in marine capture fisheries sector of Kerala due to GST

implementation. The study also highlights the possible positive effects of inclusion of diesel price under GST.

Materials and methods

Selection of study area

The survey was conducted in fishing harbours of Alappuzha and Ernakulam coastal districts in Kerala, south India. In Alappuzha District, Thottapally Fishing Harbour was the selected study area. In Ernakulam, Munambam, Thoppumpadi and Kalamukku fishing harbours/landing centres were selected for the study.

Data collection and methodology

A pre-tested interview schedule was used for the collection of information on targeted variables directly from the fishermen through personal discussions and interviews. A total sample of 90 respondents was selected from the coastal districts of Alappuzha and Ernakulam by applying random sampling method. Data on socio-economic and demographic profile of the respondents, level of awareness of fisherfolk about GST, fishers’ perception on the impacts of GST on resources and resource users as well as sources of information on GST were collected from the selected respondents. The cost structure of the different fishing inputs were collected from the fishers and related organisations like Matsyafed net factory and Fisheries departments. Standard statistical analysis tools were used for data analysis. Annual depreciation was

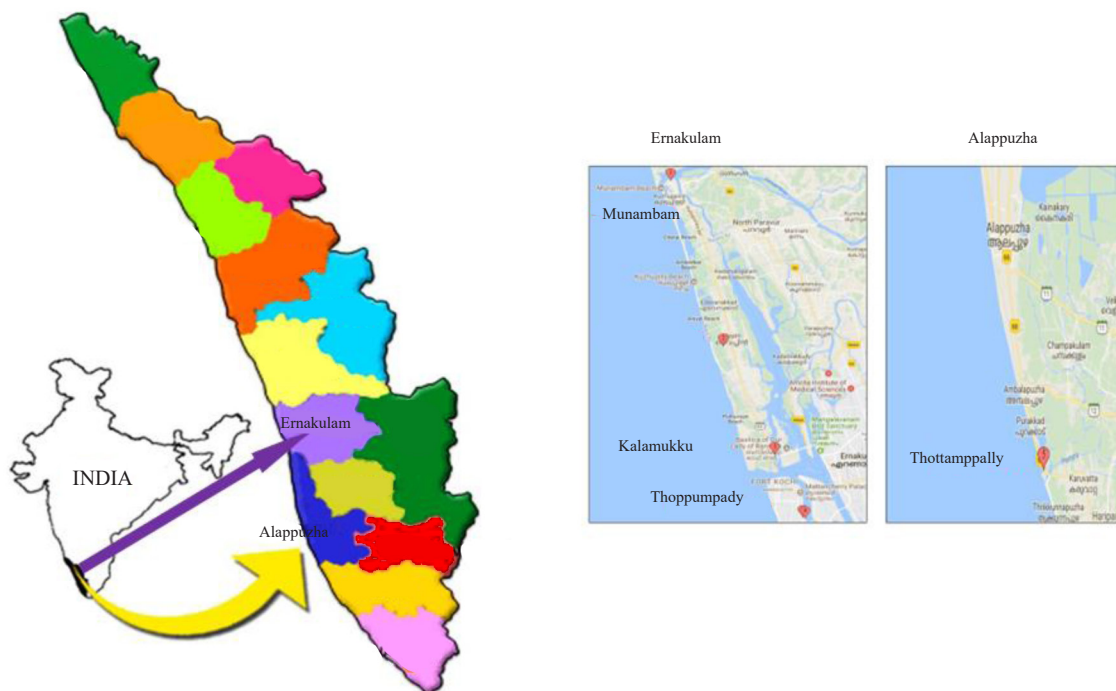


Fig.1. Study area

calculated using straight-line method for analysing and estimating the fixed cost of fishing units per annum.

Annual depreciation = (Asset cost - Residual value) / Useful life of the asset

The change in the cost of fishing units due to alteration in the taxation system from VAT to GST and revised GST was calculated to estimate increase in cost of fishing per annum and additional cost per annum in marine capture fisheries sector. The possible effect of inclusion of diesel in the GST bracket was also calculated.

The total ice requirement is estimated at 1.3 million t which is two and half times the fish landings in Kerala during 2018. The requirements of plastic crates is based upon the average daily fish landings estimated at 2100 t and a total of 50,000 crates with life of 3 years is required.

The possible positive effect of inclusion of diesel under GST was estimated based on assessing the international price of crude oil with ocean freight as on 3rd February 2018. The different transaction costs, commission and taxes across entry, refinery, processing, landing cost and other operational cost along with margins were used for computing the final retail price.

Table 1. Respondents' profile

Parameters	Frequency
Age (years)	
<35	12 (13.33)
35-45	26 (28.88)
46-55	26 (28.88)
56-65	23 (25.55)
>65	3 (3.33)
Category of respondents	
Fishermen	68 (75.55)
Boat owner	13 (14.44)
Fish vendor	2 (2.22)
Fish processor	7 (7.77)
Others	0 (0.00)
Experience in fishing (years)	
<10	5 (5.55)
10 to 25	54 (60.00)
>25	31 (34.44)

Results and discussion

Respondent profile

The respondent profile including socio-economic details related to their age, occupation and experience in fishing is furnished in Table 1.

Majority (28.88% each) of the respondents belonged to two categories of age groups of 35-45 and 46-55

followed by 25% belonging to the 56-65 category. Greater part (75%) of the respondents surveyed were fishermen followed by boat owners (14%) and fish processors (7.7%). Sixty percent of the respondents have a fishing experience of 10-25 years followed by 34% having greater than 25 years of experience and 5% having less than 10 years of experience. A vast majority (87%) of the respondents uses mechanised boats for fishing operations and only 3% of them use traditional boats reflecting the general trend in the marine fisheries sector, with greater part of the landings and effort captured by mechanised sector from the traditional sector in a phased manner, beginning in the late fifties by the Indo-Norwegian Project. On an average, the respondents go for 4 fishing trips a week. The respondent profile indicated that fishing is still a prominent livelihood option for the fishers with around 59% of them having no other alternative livelihood options (ALOs). Forty one of them reported to have some other livelihood option other than fishing but the huge dependence of them on fishing for meeting their livelihood expenses is reflected in 55% of them deriving more than 75% of their income from fishing followed by 30 and 14% deriving 51 - 75% and 25- 50% of their income respectively, from fishing.

Awareness and perception about taxes and introduction of GST in fisheries sector

It was not surprising to note that all the respondents have heard about taxes, but only to an apparent level. Existence of taxes in fisheries sector is known to 60% of the respondents while 33% were completely unaware of the same. Lack of knowledge about existing taxation system among the respondents, even if only a minority, point towards the need of more robust information dissemination mechanisms. It is under such circumstances of existing gaps in creating awareness about our current taxation system that GST was introduced. The GST was not too unknown to them in general, but its implications in fisheries sector was recognised by only 33.33%. Media (42%) was the main source through which the fishers came to know about GST followed by friends (41.34%) and relatives (17%). It was disquieting to hear from a vast majority (87.7%) of the respondents that no government body has come forward and explained to them about GST and its implications. The lukewarm initiatives from the part of government agencies to create awareness about their revolutionary reform and sensitise the fishermen concerning its implications, will definitely affect its rate of adoption.

Impact of GST in fishing industry was felt by 89% of the fishers with 54% opining that it would affect fishermen the most, followed by boat owners (30.71%), consumers (8.57%) and fish vendors (7%). This shows the surging

effect of GST introduction, touching top level producers to the lower level consumers. The fishers reasoned that GST rates introduced in the fisheries sector inputs have increased the cost of the fishing implements, which will lead to reduced fishing efforts and thereby reduced income.

Another interesting finding of the study is that even though most of the respondents were unaware about the implications of GST in fisheries sector, 43% of them strongly agreed that introduction of GST on fuels is going to have an affirmative effect on fishing. ICFA (2017) study indicated that 60% of the respondents epitomised a positive notion on the Indian agricultural sectors, however 27% of the responses were towards the negative side. But in the current study, the responses on positive and negative impact of GST on marine fisheries sector were noted to be *vice-versa*.

Changes in the cost structure of fishing equipments and inputs

The changes in the cost structure of the different fishing inputs were assessed by collecting information on the prices from Matsyafed, fisheries departments and fishing harbours. It was found that fishing rods, fishing tackles and fishing twines are taxable at 12% under GST while that on fishing rope and hooks has been fixed at 5%. All these fishing gear were exempt from tax under the VAT regime. GST on nylon twine used for net is now taxed at 18% and floats used for nets now attract 28% tax. Outboard motors and ice boxes that had a VAT rate of 14.5% now attract a GST of 28 and 18% respectively. The

tax rate of existing taxable items was increased and some of the items like marine engines were included in the highest category of 28% tax. Ice, which is an inevitable input in fisheries sector, now attracts 5% tax. Similarly, Singh *et al.* (2018) reported the impact of 12% GST on agriculture equipment. The study also discussed the impact of GST on fishery sector with 12% taxable charges for fishing hooks, rods, tackles and twines and 18% tax charges for fishing ropes. Likewise, Agarwal *et al.* (2017) studied the short term impact of GST and its reflections in small and medium businesses across Uttarakhand and Kerala states. The study also reported the different rate taxonomies of goods and services. The tax slabs of fishing inputs before and after GST introduction are given in Table 2.

Increase in cost of fishing per annum

GST was introduced on 1st July 2017 as one of the most important financial reform in India after the 90's. Amid subsequent ruckus about its introduction and call for its withdrawal, 23rd Guwahati GST Council meeting was held on 10 November 2017 and the rates were revised. Tax slabs were reduced for some of the products, which are expected to help fishermen tide over the GST shock (MoF, 2017).

Data of inputs used in different sectors (mechanised, motorised and non-motorised), their basic prices, quantity used and life was collected and the cost of each input per annum was calculated based on the average number of trips operated per year during VAT regime, after GST

Table 2. Taxation of fishing equipments/inputs before and after GST introduction (%)

Particulars	Fishing equipments/Inputs	VAT	GST (1 July 2017)	Post 23 rd GST council meeting* (10 Nov. 2017)
Fishing Inputs/equipments	Outboard motor	14.5	28	28
	Ice boxes	14.5	18	18
	Plastic crates	5	18	18
	Spare parts	5 & 14.5	28	12
	Ice	0	5	5
	Fishing hooks	0	12	5
	Fishing rods	0	12	12
	Fishing ropes	0	12	5
	Fishing nets	0	12	5
	Fishing twines	0	12	12
Navigational equipments	Compasses	14.5	28	18
	Direction finding compasses	14.5	28	18
	Navigational instruments	14.5	28	18
	Radio navigational aid apparatus	14.5	28	18
Sea safety devices	Life jackets	5	12	5
	Life buoy	5	12	5
	Fire extinguishers	14.5	28	18

*Considering the unpleasant effect of the higher tax burden in fisheries, Government had revised the taxes on these products on 10 November 2017

introduction and its revision. The taxes on fishing vessels remain as a *status quo* at 5%. On the output front, the sudden increase of GST on outboard motors and ice boxes from 14.5 to 28% and 18% respectively was a

shock to the fishermen due to the additional cost on inputs (Singh *et al.*, 2018).

The annual cost of fishing equipments and inputs in each sector during different tax regimes is furnished in Tables 3-7.

Table 3. Annual cost of fishing equipments and inputs for trawlers and gillnetters

Item	Basic price (₹)	Life	Annual costs		
			VAT (₹)	GST (₹)	Post 23 rd GST council (₹)
Engine	12,50,000	30	47,708	53,333	53,333
Gear/Net (per kg)	600	5	24,000	26,880	25,200
Fishing rope - Type A (per kg)	250	3	7,833	8,773	8,225
Fishing rope - Type B (per kg)	250	3	17,167	19,227	18,025
Twine (per kg)	250	1	11,250	12,600	12,600
Plastic crates	300	3	552	620	620
Fuel can	100	3	166	187	187
Floaters	30	3	2,835	3,456	3,456
Sinkers (per kg)	250	3	13,125	16,000	14,750
Fish sweeper	30	0.5	105	118	118
Life jackets	1,000	3	1,768	1,885	1,768
Life buoy	1,500	3	1,657	1,767	1,657
Fire extinguisher	600	1	687	768	708
Lantern	750	2	394	480	443
Water pump	1,700	5	361	385	385
GPS	24000	5	5,496	6,144	5,664
Echosounder	30,000	5	6,870	7,680	7,080
VHF radio	10,000	5	2,196	2,455	2,263
Lubricant oil	200	-	82,440	84,960	84,960
Total			2,26,610	2,47,719	2,41,442

Table 4. Annual cost of fishing equipments and inputs for ring seiners and purse seiners

Item	Basic price (₹)	Life	Annual costs		
			VAT (₹)	GST (₹)	Post 23 rd GST council (₹)
Engine	18,50,000	30	70,608	78,933	78,933
Gear/Net (per kg)	600	2	660,000	7,39,200	6,93,000
Fishing rope - Type A (per kg)	250	3	94,000	1,05,280	98,700
Fishing rope - Type B (per kg)	250	3	20,600	23,072	21,630
Twine (per kg)	250	1	67,500	75,600	75,600
Plastic crates	300	3	552	620	620
Fuel can	100	3	133	149	149
Floaters	30	3	80,325	97,920	97,920
Sinkers (per kg)	250	3	1,05,000	128,000	118,000
Fish sweeper	30	1	53	59	59
Life jackets	1,000	3	7,070	7,541	7,070
Life bouy	1,500	3	1,657	1,767	1,657
Fire extinguisher	600	1	687	768	708
Lantern	750	2	394	480	443
Water pump	1,700	5	361	385	385
GPS	24,000	5	5,496	6,144	5,664
Echo sounder	30,000	5	6,870	7,680	7,080
VHF radio	10,000	5	2,196	2,455	2,263
Lubricant oil	200	-	146,560	1,51,040	1,51,040
Total			12,70,061	14,27,095	13,60,922

Table 5. Annual cost of fishing equipments and inputs for long liners

Item	Basic price (₹)	Life	Annual costs		
			VAT (₹)	GST (₹)	Post 23 rd GST council (₹)
Engine	12,50,000	25	57250	64000	64000
Fishing rope (per kg)	250	2	7725	8652	8111
Nylon monofilament (per meter)	10	1	320000	358400	358400
Fishing hook (for 100 pc)	100	1	1,152	1290	1,210
Fishing rod	850	1	4,150	4,648	4,648
Plastic crates	300	3	207	232	232
Insulated boxes	4,000	2	4,351	4,484	4,484
Fuel can	100	3	2,328	2,616	2,616
Floaters - Type A	1,500	1	4,167	5080	5,080
Floaters - Type B	40	3	1,295	1,579	1,579
Sinkers	60	1	37,800	46,080	42,480
Fish sweeper	30	1	53	59	59
Life jackets	1,000	3	1,768	1,885	1,768
Life buoy	1,500	3	1,105	1,178	1,105
Fire extinguisher	600	1	687	768	708
Lantern	750	2	394	480	443
GPS	24,000	5	15	6,144	5,664
Echo sounder	30,000	5	15	28	7,080
VHF radio	10,000	5	15	28	18
Lubricant oil	200	-	15	18	18
Total			5,41,432	6,02,671	5,96,889

Table 6. Annual cost of fishing equipments and inputs for motorised sector

Item	Basic price (₹)	Life	Annual costs		
			VAT(₹)	GST(₹)	Post 23 rd GST council (₹)
Outboard motor	90,000	4	25,763	28800	28,800
Gear/Net (per kg)	600	8	1,875	2100	1,969
Fishing rope (per kg)	250	2	515	577	541
Twine (per kg)	250	2	563	664	630
Plastic crates	300	3	345	387	387
Insulated boxes	40,000	2	4,351	4484	4,484
Fuel can	100	2	150	168	168
Floaters	10	3	280	341	341
Sinkers (per kg)	250	3	1,313	1600	1,475
Fish sweeper	30	1	26	30	30
Life jackets	1,000	3	1,061	1131	1061
Life bouy	1,500	3	1,105	1178	1,105
Lantern	750	2	394	480	443
GPS	13,000	5	2,874	3213	2,962
Lubricant oil	200	-	29,312	30208	30,208
Total			69,924	75,361	74,602

Introduction of GST has many implications in fisheries sector, but increase in cost of fishing per annum can be used as comprehensive expression of its effect. Analysis of data related to the fixed cost of fishing equipment revealed that the introduction of GST has its effects in mechanised, motorised and traditional sectors, with an additional annual increase in cost of fishing by 8.2,

6.69 and 9.22% respectively in each sector. A comparison of the increase in the cost of fishing before and after revising GST rates is given in Table 8.

Additional cost per annum in marine capture fisheries sector

Marine capture fisheries play a vital role in Kerala's economy, providing employment and income to around

Table 7. Annual cost of fishing equipments and inputs for non-motorised sector

Item	Basic price (₹)	Life	Annual costs		
			VAT (₹)	GST (₹)	Post 23 rd GST council (₹)
Gear/Net (per kg)	600	10	720	806	756
Fishing rope (per kg)	250	2	309	346	324
Twine (per kg)	250	2	1,125	1,328	1,260
Fishing hook (for 100 pc)	100	0.5	192	215	202
Fishing rod	850	1	1,660	1,859	1,859
Plastic crates	300	3	138	155	155
Floater	10	3	224	273	273
Sinkers (per kg)	250	3	875	1067	983
Fish sweeper	30	1	26	30	30
Life Jacket	1,000	3	707	754	707
Torch	300	2	158	192	177
Total			6134	7025	6726

Table 8. Additional increase in the cost of fishing per annum

Fishing crafts	GST (%)	Post 23 rd GST council (%)
Trawlers and gillnetters	9.78	6.59
Purse seiners and ring seiners	12.50	7.80
Liners	11.30	10.21
Total mechanised	11.19	8.20
Motorised	7.78	6.69
Non-motorised	14.96	9.22

6 lakh marginalised fishermen. With most of the fishermen entirely dependent on the fishing income for their livelihood, any alteration in relation to it is going to affect the entire community from its root. Tharani and Ahmed (2017), stated the merits and demerits of GST on agriculture produces; machineries, research and information on the government policies, schemes, agriculture loans, market prices, animal husbandary, fisheries, horticulture, loans/ credit and sericulture. The study articulates that the system is often difficult to implement such tax by the centre for an agro-commodity due to the nature of trivial policies adopted by the different states. However, the centre has implemented them to

make the tax support policies efficient thereby covering pressure on the people.

Results of the present study show that, marine capture fisheries sector in Kerala will be incurring an additional cost of ₹171.25 million per year with ₹116.76 million in mechanised, ₹52.28 million in motorised and ₹2.19 million in traditional sectors respectively. Ice which was earlier exempt from tax, now attracts 5% GST and plastic crates used for ice storage and transportation are now charged 18% tax, which will lead to total additional cost of ₹5.7 million. Comparison of the increase in the cost of fishing before and after revising GST rates at the 23rd Guwahati GST Council meeting is given in Table 9.

Possible positive effects of inclusion of diesel under GST

Most of the fishermen are not aware about the technicalities or the phased GST mechanisms because of which their initial opinion on GST was negative. Nowadays diesel prices are determined on daily basis in India with allegation on oil companies exercising huge profit; the important note is that the price of diesel is consistently showing an increasing trend. This increase

Table 9. Additional cost per annum incurred in marine capture fisheries of Kerala

Sectors	Number of crafts	GST (₹) (01-07-17)	Post 23 rd GST (₹) (10-11-17)	Total additional cost in GST (₹ million)	Total additional cost in Post 23 rd GST (₹ million)
Mechanised	4722	202251.47	144365.26	177.37	116.76
Motorised	11175	5437.28	4678.39	60.76	52.28
Traditional	5884	604.56	372.64	3.57	2.19
Total				241.70	171.23
Input costs					
Ice	91.52	96.10	4.57	4.57	
Plastic crates	9.10	10.22	1.12	1.12	
Total				5.70	5.70

in prices despite decrease in international crude oil prices is due to the non-evasion of excise duty and VAT charged by the Government of India and the State Governments respectively. In case of diesel which is commonly used in fishing sector of Kerala, around 43% of the fuel price is constituted by these taxes. Increase in the price of diesel is believed to affect the fishers with reduction in fishing trips and increasing cost of fishing. But inclusion of GST on fuels may have a constructive effect on fisheries sector as the results say that introducing GST on fuels leads to a reduction of diesel price by 33 and 27% at 18 and 28% GST slabs respectively (Table 10). This, in turn, will

dwindling catches and lower landings. currently faced by the dependents of fisheries sector. The immediate increase in cost of fishing equipments (fixed cost) due to GST is likely to get balanced if GST is introduced for fuels too, as 65% of the operating cost in fishing is contributed by fuels and inclusion of fuel in GST will reduce the price by 30-40%, so that the fishers will go for more deep sea fishing and can exploit more deep sea resources. As fisheries is one of the major sectors contributing to the Indian economy, it is expected that the Government will reconsider its decision on GST in fisheries sector and keep a lower tax slab on fishing equipments in a phased manner and consider including fuel under GST.

Table 10. Price of diesel if included under GST

Price of diesel with GST (₹ per litre)		Cost of diesel per trip* (₹)	Cost reduction (%)
At 18%	42.77	20572	32.66
At 28%	46.39	22314	26.95
Subsidised diesel price with GST for fishers			
At 18%	39.35	18927	32.66
At 28%	42.68	20529	26.95

*Note: Average diesel usage/fishing trip: 450-500 l, calculated based on Vivekanandan *et al.* (2013)

benefit fishing by reducing the fishing cost, as 65% of the fishing cost is contributed by fuel.

It should be noted that according to the finding of the study, even though most of the respondents are unaware of the implications of GST in fisheries sector, 43% of them strongly agree that introduction of GST on fuels is going to have an affirmative effect on fishing. Inclusion of diesel under GST bracket can thus act as a balancing step, saving the fisherfolk from the undesirable effects of inclusion of previously tax exempted fishing inputs under higher GST tax slabs.

In general, it is expected that the technology driven fishing investment may take a back stage due to increasing taxes on navigational equipment brought by the introduction of GST. Considering the simmering tension generated by GST implementation in the country, the government is expected to reconsider its decision. In the 23rd Guwahati GST Council meeting, Government has made some changes in the tax rates, which is expected to help the fisheries sector tide over the GST shock (MoF, 2017). Due to the higher tax burden, the total marine capture fisheries sector of Kerala will incur an additional cost of ₹171.23 million per annum which in turn would result in the increased price of marine fish in Kerala. Also the cost of fishing inputs in different sectors *viz.*, mechanised, motorised and traditional will be increased by 8.22, 6.69 and 9.22% respectively, which will add on to the problems of reduced catch per unit effort (CPUE),

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