

An analysis of the economic benefits of MSC certification for the South African hake trawl fishery

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ABSTRACT

Ecolabelling has become an essential component of the global sustainable seafood trade. The Marine Stewardship Council (MSC) is the world leader in certification and ecolabelling programs for wild capture fisheries. While the environmental benefits of certification have been widely recognised, its economic benefits are often anecdotal or unknown. The South African hake trawl fishery was first certified in 2004 re-certified in 2010 and most recently in 2015 for a further five years. Two studies were conducted to investigate the potential socio-economic benefits of MSC certification to the Hake fishery. An analysis of the global production and trade in whitefish, focussing on hake was conducted using FishStat and Comtrade data. Additional information was collected from industry sources, NGOs and from MSC-specific data on export volumes and values. A succession of four scenarios were proposed to simulate possible economic outcomes resulting from shifting to a non-certified fishery. The method then compared the current economic worth of the fishery to the progressive loss of value following these scenarios; the difference representing the net worth of MSC-certification to the fishery. The analysis showed that the fishery's NPV of combining these scenarios over a 5-year period corresponds to a 37.6% reduction vis-à-vis the status quo. Furthermore a second study based on multipliers derived from industry input-output analysis and Social Accounting Matrix showed that MSC certification contributes an estimated 6,800 to 13,600 full-time equivalent (FTE) jobs in the hake industry. Together these studies showed that retaining MSC-certification is critical in order to maintain high levels of employment and current market position.

INTRODUCTION

The bulk of South African hake sold both locally and internationally is MSC certified. Trawl caught hake from the inshore and deep-sea offshore trawl sectors accounts for about 93% of hake's annual catch. The handline and longline sectors which catch the balance of the TAC were not part of the unit of certification. It is important to mention that the scope of our analysis is limited to hake caught by trawl method, however because it is virtually impossible to distinct the origin of hake traded based on the method used to catch it, some of our estimates include, de facto, hake caught by other methods (handline and longline). Moreover, while non-trawl caught hake represents less than 7% of the total hake caught in 2012 in South Africa, it is estimated that only 40% of this hake is exported corresponding to less than 2.8% of all hake exported in volume (greenweight equivalent). In turn, 2.8% in volume exported does not necessarily translate in the same percentage in export value especially since it cannot not benefit from the price advantage brought by MSC certification.

The inshore and deep-sea trawling components of the South African hake resource achieved MSC certification in 2004, via SADSTIA, the South African Deep-sea Trawling Industry Association and was re-certified in 2010 (Powers, Tingley, & Combes, 2011) and most recently in 2015 (Andrews, Groeneveld, & Pawson, 2015) for a further five years. This does not mean that all certified product is sold with the MSC logo displayed, or that such export demands MSC certification. A rough estimate by SADSTIA is that MSC certified products amounts to approximately 30% of the volume of the trawl hake fishery (Bross C. A., 2013-2014). MSC provides a price differential in certain cases, in other cases providing access to markets that can absorb high priced value-added products.

In November 2013, the Marine Stewardship Council commissioned OLRAC-SPS to carry out an analysis of the economic benefits related to MSC certification of the South African hake trawl fishery while reviewing the volumes and values of the relevant global trade of whitefish with emphasis on the South

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African hake commodities (Lallemand, Bergh, Thompson, & Hansen, 2014). This study was completed in conjunction with a macro-economic study of the benefits of MSC certification by the Bureau of Economic Research (BER) in Stellenbosch, South Africa (Bureau for Economic Research, 2013).

Prior to that, the most recent economic assessment of the SA hake fishery was done in 2002 (Hutton & Sumaila, 2002), however the main goal of that study was to undertake a bio-economic assessment of Cape hake on the west coast of South Africa and to analyse potential outcomes under alternative management arrangements and the potential restructuring of the industry.

An important objective of the present study is the estimation of the economic benefits of MSC certification from price trends and differentials, trends in market diversification and access to new markets, since the South African hake fishery achieved certification in 2004. It was also necessary to quantify and typify the sale of competitive products and species on international markets to gain an appreciation of what might happen to South African hake should MSC certification be revoked.

CERTIFICATION AS A MARKET-BASED INCENTIVE

The Food and Agricultural Organisation (FAO) started monitoring global fisheries in the early 1970s. They quickly recognised that most of the world's fish stocks had collapsed, were overexploited or optimally exploited, a cause for considerable concern. This situation has not improved in the last 3 decades, despite traditional management strategies being in place in many developed and developing countries. The clear failure of traditional management measures to manage fish stocks (Gibbs, 2008), and the continued bad press regarding ecosystem destruction and by-catch issues, has stimulated public awareness about the state of fisheries and of fisheries management (Johnston & Roheim, 2006). 'Market discipline' started to develop as a result of consumers exercising their right to reject fish caught from questionable fishing practices and/or origin (Jacquet & Pauly, 2007), (Jacquet & Pauly, 2008), (Brecard, et al., 2009) and (Gutierrez, et al., 2012). In recent years this has led to reforms in fisheries management practices. The most important driver for these reforms came from the implementation of certification and eco-labelling.

Setting standards to promote sustainable fishing methods leading to certification and eco-labelling of fish products was initiated in 1997 by the Marine Stewardship Council (Gulbrandsen, 2009). Various similar certification schemes have emerged since. Not all sustainability certifications involve the use of eco-labels (eco-labelling informs consumers about the sustainable nature of a product with a label). In addition, some of these certification schemes also monitor and certify the fish product's chain of custody from capture to consumer. This has value in itself, in some cases more so than the eco-label itself, as is typically the situation in the USA. For this reason, the most important and influential eco-labelling schemes incorporate standards and certification for chain of custody. The most important eco-labelling schemes relevant to the global whitefish market are (with the founding year in brackets), Friend-of-the-Sea (2006), Krav (2004), MSC (1997) and Naturland (2006). The whitefish fisheries that have been certified by these schemes are given in Table 1 and Table 2. Various other species are currently under assessment, but the details are not part of this study.

Table 1: A list of all the current global MSC certified whitefish fisheries (does not include those under assessment)

Country	Fishery	Volume (Mt)
South Africa	Hake trawl (inshore & deep sea)	156,000
USA & Canada	Pacific Hake (mid-water trawl; <i>M. productus</i>)	184,000
New Zealand	New Zealand EEZ hake (<i>M. australis</i>)	12,500
New Zealand	Hoki	150,000
Argentina	Hoki	110,000
USA	Alaska pollock - Bering Sea and Aleutian Islands	1,205,371
USA	Alaska Pollock- Gulf of Alaska	98,975
Russia	Russia Sea of Okhotsk Pollock	840,000
US & Europe	Cod (12 certified fisheries)	>1 million
Europe	Cod (recently certified)	14,000

Table 2: A list of global whitefish fisheries certified by other certification schemes

Ecolabel name	Species	Location
Natureland	Nile Perch	Africa
Friend of the Sea	Blue Cod	East Coast of New Zealand
Friend of the Sea	Cod	Iceland
KRAV	Cod	Nordic countries
KRAV	Haddock	Nordic countries

It is quite clear that certification of a fish commodity gives the seller a competitive advantage since it is often synonymous with superior quality henceforth bringing a price premium on the product see Figure 1.

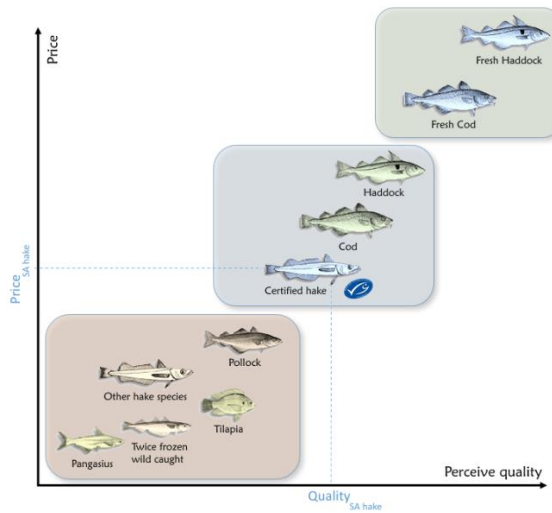


Figure 1: Perceived quality versus prices for the most common whitefish species. based on (Geldenhuys, 2013)

Although seafood certification such as MSC is never a requirement “per se” by any market around the World, it is often demanded by consumers and importers alike.

These certification schemes lie on a spectrum of commitment to strict sustainability and traceability standards (Roheim, 2009). Differentiation between eco-labels has led to the development of a system of rating for eco-labelling schemes. A study by WWF (Accenture Development Partners (ADP), 2009) comparing schemes showed that the MSC are still the gold standard for sustainability and chain of custody certification (Table 3). To date the MSC have certified 198 fisheries globally, with a further 100 under assessment (Marine Stewardship Council, 2014).

Table 3: The ranking of the main eco-labelling schemes involved in global whitefish fisheries and the associated score are given

Ranking	Ecolabel name	Weighted average score
1	Marine Stewardship Council	1.91
2	Natureland	1.29
3	Friends of the Sea	1.12
4	Krav	1.00

The preferential procurement of eco-labelled products by retailers and informed consumers (Tindall, Walmsley, Pollard, & Agnew, 2008) is leading to a range of socio-economic benefits (Roheim & Seara, 2009) in addition to the main motivating environmental benefits (Martin, Cambridge, Grieve, Nimmo, & Agnew, 2012), (Heupel & Auster, 2013). Certification has the potential to contribute to poverty alleviation and food security in developing countries, which contribute 70% of global fish supply, by guaranteeing the sustainable utilisation of fish stocks, and access to markets (ISU, 2012), (Pérez-Ramírez, Phillips, Lluch-Belda, & Lluch-Cota, 2012). Table 4 provides a summary of benefits (Standing, 2009), (UNEP, 2009),

(Mathew, 2011). Fisheries in developing countries however also present the biggest management challenges given the complexity of small scale operations (Mathew, 2011).

Table 4: A table of perceived socio-economic, environmental and biological benefits of certification and eco-labelling for the producers, consumers and retailers.

Expected benefit / Stakeholder	Retailers/ food service sector	Consumers	Producers
Price increases	X		X
Improved client relationship	X		X
sustainability	X	X	X
Better knowledge of provenance / source	X	X	X
Continued / improved access to markets			X
Improved public image	X		X
Product differentiation and market segmentation	X		X

GLOBAL HAKE MARKET

The global hake market includes all captured and traded species of the family Merlucciidae and Phycidae, and contributes roughly 425,000 NWt to the global whitefish market. The top exporters of hake worldwide are Argentina (26%), Namibia (12%), USA (10%), Spain (10%), South Africa (9%), Canada (8.5%), Chile (7%), Uruguay (3%) and Peru (2.8%). Hake commodities are mostly exported to the USA and the EU as both fillet and non-fillet products. Recently there has been increasing pressure on hake resources caused in part by a rise in demand from premium markets in Northern Europe. Countries like Germany, not traditionally known for their hake consumption, are seeking value-added products such as hake fillets which are sold at a premium price. There is also sustained pressure from countries from Southern Europe such as Spain and Portugal where hake consumption has been traditionally important although less so due to the recent financial crisis.

The status of most hake stocks in developing countries is questionable and/or unknown (with the exception of South Africa) due to inaccurate reporting or insufficient fisheries management, a source of concern in markets where consumers are sensitive to sustainability issues. This has fuelled the demand for eco-labelled hake product. As a consequence of good co-operation amongst all the stakeholders in South Africa, the industry in RSA is now ideally positioned to take advantage of eco-label sensitive markets (Field, et al., 2013).

SOUTH AFRICA'S HAKE MARKETS

South African hake (*M. paradoxus* and *M. capensis*) is mostly exported to Southern European countries, including Spain, Portugal and Italy (Figure 2). Up to 2011, these countries imported 75 % of South African total exports. In 2012 these southern European countries imported only 65% of South Africa's total exports. New markets in the USA (2.2%), Australia (7.5%) and northern Europe (15.7%) made up the balance (Table 5). This was not due to a shift of export volumes between countries, but largely due to an increase of 14,000 NWt in the total export from South Africa - exports to Spain (14,000 t - coincidental), Portugal (4,400 t) and Italy (1,400 t) were maintained throughout. This clearly points to South Africa expanding into new niche markets, where hake is generally sold in the form of value-added products at higher prices. In 2012, South Africa obtained a global export price of \$3,678/NWt. This is higher than the average global export price achieved by any country, and therefore also higher than the global average price of \$2,9/NWt (Table 6).

Namibia, Argentina, Chile and Spain are South Africa's main competitors in Southern European markets. Spain, Namibia, Argentina, Chile and South Africa are the main exporters into southern Europe, contributing 20.5 %, 19.4 %, 11.8 %, 9 % and 17.3% respectively to the total amount of hake imported into Southern Europe. This suggests that Spain and Namibia are South Africa's main competitors in the Southern European market (Table 5), but the figure for Spain is problematic because it most likely contains a high degree of re-export. Chile and Spain are the biggest exporters vis-à-vis the global hake production and exports. Spain and Chile's ability to supply their markets is linked to the stock status of other countries since it is most likely that they import hake from producing countries such as Namibia and Argentina to

supply their re-export. Furthermore, as previously discussed, Namibia, Argentina and Chile have strong historical links to Spain. The vertical integrated trade between these four countries make them a very strong market force against which South Africa has to compete. In both Northern Europe and Australia, South Africa is the main exporter contributing 15.7 % and 70.1 % respectively. In these two markets, Namibia is the main competitor, albeit at a lower level (Table 5). When we look at the price of hake as a proxy for product type i.e. value-added products versus less valuable ones, only Namibia appears to be competing with South African hake (Table 6).

Table 5: Exports markets, volume and market shares of South African hake and of its main competitors in those markets in 2012 based on UN COMTRADE data

		Export Markets					Total Exports
		Australia	Northern Europe	Southern Europe	United States of America	Rest of the world	
Exporters	Argentina	15 t 0.4%	4,749 t 11.0%	16,587 t 11.8%	7,967 t 35.8%	80,795 t 37.6%	110,113 t 25.9%
		as a % of export market	0.0%	4.3%	15.1%	7.2%	73.4%
		as a % of country's exports	0.0%	0.0%	0.0%	0.0%	0.0%
	Namibia	898 t 22.7%	5,172 t 12.0%	27,142 t 19.4%	529 t 2.4%	16,654 t 7.7%	50,394 t 11.9%
		as a % of export market	1.8%	10.3%	53.9%	1.0%	33.0%
		as a % of country's exports	0.0%	0.0%	0.0%	0.0%	0.0%
	Spain	-	4,644 t 10.8%	28,760 t 20.5%	19 t 0.1%	11,013 t 5.1%	44,437 t 10.5%
	as a % of export market	0.0%	10.5%	64.7%	0.0%	24.8%	
	as a % of country's exports	0.0%	0.0%	0.0%	0.0%	0.0%	
South Africa	2,773 t 70.1%	5,827 t 13.5%	24,217 t 17.3%	806 t 3.6%	3,379 t 1.6%	37,002 t 8.7%	
	as a % of export market	7.5%	15.7%	65.4%	2.2%	9.1%	
	as a % of country's exports	7.5%	15.7%	65.4%	2.2%	9.1%	
Chile	21 t 0.5%	1,696 t 3.9%	12,640 t 9.0%	3,741 t 16.8%	11,674 t 5.4%	29,773 t 7.0%	
	as a % of export market	0.1%	5.7%	42.5%	12.6%	39.2%	
	as a % of country's exports	0.1%	5.7%	42.5%	12.6%	39.2%	
Rest of the world	248 t 6.3%	21,068 t 48.8%	30,793 t 22.0%	9,204 t 41.3%	91,484 t 42.6%	152,797 t 36.0%	
	as a % of export market	0.2%	13.8%	20.2%	6.0%	59.9%	
	as a % of country's exports	0.2%	13.8%	20.2%	6.0%	59.9%	
Total Imports	volume exported	3,955 t	43,156 t	140,140 t	22,265 t	214,999 t	424,515 t
	as a % of total exports	0.9%	10.2%	33.0%	5.2%	50.6%	100.0%

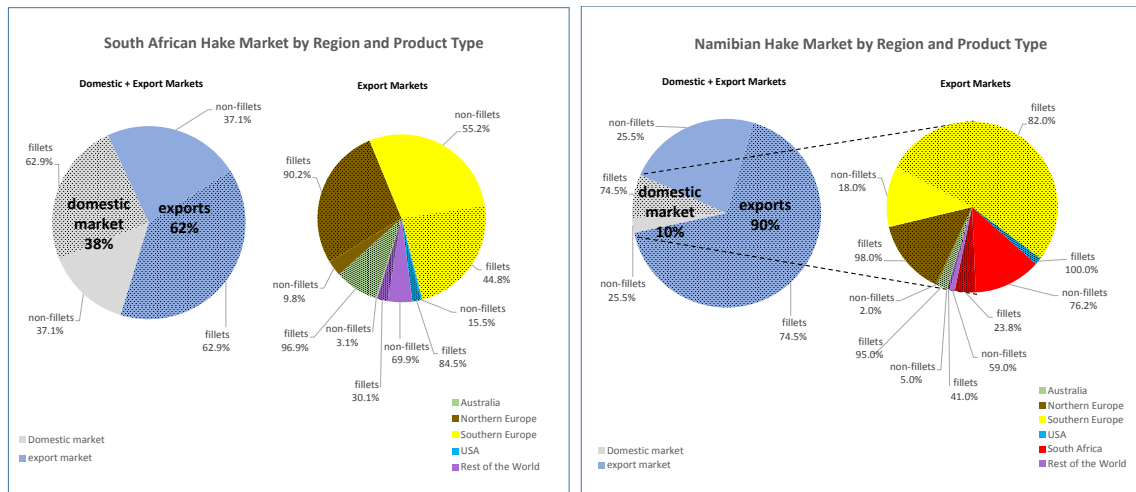


Figure 2: South African vs. Namibia hake domestic and export markets by region and product type expressed as GWt equivalent based on 2012 UN COMTRADE and MSC data.

Table 6: Hake weighted average export price by export market and globally sold by South Africa and by its main competitors overseas

		Export Markets					All Export Markets
		Australia	Northern Europe	Southern Europe	United States of America	Rest of the world	
Exporters	Argentina	\$2,920.0 /t	\$2,633.3 /t	\$2,726.6 /t	\$2,721.5 /t	\$2,387.5 /t	\$2,473.4 /t
	Namibia	\$4,236.4 /t	\$3,703.8 /t	\$3,677.9 /t	\$6,093.2 /t	\$3,439.9 /t	\$3,637.2 /t
	Spain		\$4,548.1 /t	\$4,219.6 /t	\$9,477.4 /t	\$4,135.1 /t	\$4,235.3 /t
	South Africa	\$6,725.2 /t	\$3,827.7 /t	\$3,932.9 /t	\$9,328.2 /t	\$4,716.0 /t	\$4,314.6 /t
	Chile	\$3,072.8 /t	\$2,546.9 /t	\$4,123.1 /t	\$3,823.2 /t	\$2,960.6 /t	\$3,539.1 /t
	Rest of the world	\$4,919.1 /t	\$4,202.1 /t	\$4,141.5 /t	\$4,224.8 /t	\$4,060.4 /t	\$4,112.5 /t
		weighted average export prices (\$/t)					

Cooperation between industry and NGOs: In South Africa, three NGO and fishing industry initiatives have played a key role in driving the necessary changes towards ecosystem-based management and more sustainable and responsible fisheries: the Marine Stewardship Certification of the South African Merluccius spp. trawl fishery, the Southern African Sustainable Seafood Initiative (SASSI) and the development of the Responsible Fisheries Alliance (RFA). These three initiatives have increased consumer awareness, facilitated new cooperative research and resulted in sharing the responsibility for sustainable fisheries between the main industry stakeholders and the government for the benefit of the people of South Africa.

Until the time of the financial crisis in 2008, South Africa also enjoyed the benefits of access to the lucrative Spanish market. However, Spanish influence in the South African fishery per se, aside from provision of access to marketing channels, is limited. The situation since the financial crisis of 2008 has changed dramatically. Prices to Spain are significantly down, as are volumes. This has left the southern Hemisphere fisheries with a low diversification of export markets by country, hence vulnerable to any problems in those markets and a low diversification w.r.t. to product lines.

In some cases these fisheries are in an extremely precarious economic situation, with Pescanova, the largest Spanish fishing company, heavily invested in the “southern Hemisphere hake model”, unbundling or closing down (IntraFish Media, 2012c)& (IntraFish Media, 2013b).

The South African hake fishery, which is the only MSC certified hake fishery in southern Africa and South America combined, has adopted a very different strategy since 2008. Access to certain markets via value-added products (fillets) has only become possible since 2004 when the South African trawl hake fisheries became MSC certified. These markets are mostly in Northern Europe (Denmark, France, Germany, Netherlands, Sweden, Switzerland and the United Kingdom), North America (USA) and Australia.

In effect, MSC certification has been the South African hake fishery’s “get out of jail for free” card (IntraFish Media, 2013c). They have leant heavily on the MSC ticket to gain access to valuable northern European markets for fillet product lines, and there is still considerable potential to develop these markets. This has boosted shore-side employment in the Western Cape, and has enhanced the value of the fishery. South Africa is now in an enviable position. The prospect of relegating the South African hake fishery to the situation that other southern Hemisphere fisheries find themselves in seems rather bleak.

THE CONTRIBUTION OF MSC SA HAKE TO THE SOUTH AFRICAN ECONOMY

Despite being a relatively small contributor to the nation’s gross domestic product, commercial fishing makes a significant contribution to the Western Cape Province’s Gross Domestic Product (GDP). The workforce in the deep-sea trawling industry makes up approximately 35% of the workforce employed in the South African fishing industry. We estimated that approximately 70% of the annual hake catch is exported and we estimated the turnover of the sector to be around R2.871 billion (US\$392.7). This last figure is a conservative estimate of the average value of the hake fishery because in 2012 only 87.9% of the TAC was caught. The 2012 under-catch is due to a shortage of fleet capacity available at the time for the TAC which increased by almost 30% between 2011 and 2012. . Estimating the value of the fishery as if 100% of the 2012 TAC was caught produces a baseline figure in agreement with the Department of Agriculture, Fisheries and Forestry’s value estimate of R3.2 billion (US\$307.7 million) using 2011 wholesale values. We estimate that the bulk of the value estimate of R2.871 billion, R2.6 billion (US\$250.7) or 90.8%, comes from the deep-sea trawl sector, R71.4 million (US\$6.9 million) or 2.5% from the inshore trawl sector, and R192.4 million (US\$18.5 million) or 6.7% from the longline and handline sectors combined.

Fisheries workers involved in the South African hake trawl industry are well rewarded compared to the rest of the domestic fishing industry. Fishing activity in this industry is not seasonal and employs workers year around bringing in salaries ranging from R130,000 to R150,000/ year for a skilled worker (Bross C. A., 2013-2014). Although most fishing crew in South Africa do not enjoy, in practice, the provisions of the Basic Conditions of Employment Act of 1997, a unique labour relations framework has been established for seagoing workers in the deep-sea and inshore trawl fisheries. This is as a result of the establishment, in 2001, of a Bargaining Council for the fishing industry. A Collective Agreement, which sets out basic conditions of employment for workers in these two fisheries, was negotiated in the Bargaining Council and has been in effect since 2 May 2003. The basic conditions include set daily wages for each category of worker, set hours of work and regulated rest and leave periods. Workers who are permanently employed

are also provided with pension/provident funds; group life assurance; medical assistance; regular paid shore leave and annual holidays. The establishment of the Bargaining Council was a proactive move on the part of employers and unions in the trawl fisheries who realised that neither the Basic Conditions of Employment Act, nor the Merchant Shipping Act, provide for the rights of fishers.

In 2012, according to SADSTIA website (SADSTIA, 2014), an estimated 6,653 workers were employed in the deep-sea trawling industry accounting from up to 37% of the wider fishing workforce. BER reports that 8,355 are directly employed in the wider hake industry (BER, 2013). From a combination of sources (DAFF, 2012), (SADSTIA, 2013) and (BER, 2013), we estimated that the hake inshore trawl industry alone must have been employing roughly 722 people in 2012.

Since, to this date, the only comprehensive fisheries employment data available comes from the Sauer et al study (Sauer, Hecht, Britz, & Mather, 2003) which predate the advent of the South African hake trawl MSC certification, it is hard to estimate the positive impact the MSC certification of the Hake trawl fishery might have had on employment and what would the impact be of losing it. There is currently no reliable estimates that can be used to answer the “what if?” question, assuming the employment situation following a loss of certification would most likely be similar to the one in the pre-2003 era. But the most likely and substantial negative impact following a loss of certification would come from the important role played by eco labelling in the whitefish market for more than a decade, particularly considering those products competing with South African hake which would most likely use their certification to differentiate themselves, should South Africa fail to recertify its own.

To calculate the current value of the South African hake fishery we gathered the following information; a) *the weight of non-fillet products and fillet products exported to each country globally*, b) *the price paid per kg for non-fillet products and fillet products for each country that imports from South Africa*, c) *the weight and product split of hake sold in the domestic market* and d) *The price by hake product being sold domestically*.

The same information was also used to calculate the value of the South African hake industry under different market and price scenarios described below. To obtain this information, two data sources were used; a) *Global COMTRADE data (import and export)* and b) *MSC certified South African hake sales data reported to the MSC by the industry*. The value of the hake industry determined under the current scenarios is for 2012 only, as both of these data sources only have data available up to this point.

For the purpose of reporting, the countries currently being exported to by South Africa were split into different regions. These regions were chosen to combine countries with similar buying profiles and/or economic characteristics w.r.t. retailers / consumers and eco-labelling. This resulted in 5 distinct markets, namely *Australia, Northern Europe* (Austria, Belgium, Denmark, France, Germany, Netherlands, Sweden, Switzerland, and the United Kingdom), *Southern Europe* (Italy, Spain, and Portugal), *USA* and the ‘*rest of the World*’. Countries included in the ‘rest of the World’ category which make up a very small proportion of total South African hake exports, do not demand MSC labelled products, and have therefore very little impact on this analysis.

Namibian hake data from COMTRADE were also used in the calculation of the value of MSC certification under the different scenarios for the South African hake fishery. Given the close geographical proximity, that the fishery targets the same species, and the fact that (unlike South Africa) they do not have MSC certification, Namibia makes an ideal comparison and basis for what could happen to the South African market in the event of the loss of MSC certification.

Since not all scenarios are likely to occur immediately or to be maintained over a prolonged period, we simulated possible short, medium and long term revenue impacts of loss of MSC certification that can be used to get a better estimate of the cumulative effect over a five year time horizon.

Scenario 1 – “Market and product status quo with loss of MSC price premium”.

Scenario 2 – “Shift from Northern to Southern Europe export market”

Scenario 3 – “Downgrading export product type to mostly non - fillet”

Scenario 4 – “Shifting most exports to the domestic market”

The scenarios’ assumptions and market value estimates are shown in Table 7.

For the first year after the loss of MSC certification, Scenario 1, a loss of MSC certification is assumed to reduce export prices received by SA exporters, as defined earlier, reflecting a loss of price premiums in both domestic and export markets, but maintaining the same relative volumes of product in GWt terms in the domestic and export markets as in the current situation. Fishery value estimates under Scenario 1 are:

domestic - R0.652 billion and export - R1.398 billion, a total fishery value of R2.050 billion (Table 7). This is a loss of R0.820, which is 28.6% of the estimated value of the fishery at present (Table 8).

Table 7: Model assumptions used in baseline and Scenarios 1 to 4

Scenarios Assumptions	Current (baseline)	Scenario 1	Scenario 2	Scenario 3	Scenario 4				
Scenario description	MSC and price premium	loss of price premium	market shift from Northern to Southern	product type shift from Fillet to non-	market shift from export to domestic				
2012 catch (t greenweight)	127,974 t	127,974 t	127,974 t	127,974 t	127,974 t				
% of catch exported	70%	70%	70%	70%	20%				
% of catch sold domestically	30%	30%	30%	30%	80%				
non-Fillet products greenweight equivalent sold as a % of catch	37%	37%	43%	73%	74%				
on domestic market	11%	11%	11%	11%	56%				
on export market	26%	26%	32%	62%	18%				
Australia	0.2%	0.2%	0.1%	1.4%	0.4%				
Northern Europe	2.1%	2.1%	1.2%	9.9%	2.9%				
Southern Europe	20.1%	20.1%	29.5%	48.7%	14.0%				
USA	0.2%	0.2%	0.2%	0.9%	0.3%				
Rest of the World	3.3%	3.3%	0.9%	1.1%	0.3%				
Fillet products greenweight equivalent sold as a % of catch	63%	63%	57%	27%	26%				
on domestic market	19%	19%	19%	19%	24%				
on export market	44%	44%	38%	8%	2%				
Australia	5.8%	5.8%	1.6%	0.3%	0.1%				
Northern Europe	19.1%	19.1%	10.9%	2.2%	0.6%				
Southern Europe	16.3%	16.3%	24.0%	4.8%	1.4%				
USA	1.1%	1.1%	0.9%	0.2%	0.1%				
Rest of the World	1.4%	1.4%	0.4%	0.1%	0.0%				
weighted average price (US\$/t)			% change from baseline	% change from baseline	% change from baseline	% change from baseline			
domestic price for non-Fillet products	3,137.9	2,705.1	(-14%)	2,705.1	(-14%)	2,705.1	(-14%)	978.8	(-69%)
domestic price for Fillet products	5,264.7	3,289.0	(-38%)	3,289.0	(-38%)	3,289.0	(-38%)	2,875.6	(-45%)
export price for non-Fillet products	2,302.9	1,918.4	(-17%)	2,002.8	(-13%)	2,015.8	(-12%)	2,015.8	(-12%)
export price for Fillet products	5,499.0	3,664.3	(-33%)	3,657.3	(-33%)	3,657.3	(-33%)	3,657.3	(-33%)
Market Value (Million Rand)			% change from baseline	% change from baseline	% change from baseline	% change from baseline	% change from baseline	% change from baseline	
value of domestic market	915.3	652.1	(-28.8%)	652.1	(-28.8%)	652.1	(-28.8%)	922.3	(+0.8%)
value of the Export Market	1,956.3	1,398.8	(-28.5%)	1,407.0	(-28.1%)	1,359.1	(-30.5%)	390.1	(-80.1%)
overall hake market value	2,871.7	2,050.9	(-28.6%)	2,059.1	(-28.3%)	2,011.2	(-30.0%)	1,312.4	(-54.3%)

In the second year after the loss of MSC certification, Scenario 2 is assumed to occur. This involves shifting exports from Australia, Northern Europe and the Rest of the World to Southern Europe reflecting a loss of premium markets. For this scenario, our estimate for the domestic market is the same as in Scenario 1, i.e. R0.915 billion. The value of the export market is estimated to be R1.407 billion, not very different to Scenario 1. The total value of the fishery is R2.059 billion. The loss is R0.812 billion, 28.3% of the current value of the fishery (Table 8). Note – The export market value estimate for Scenario 2 is slightly larger than for Scenario 1. The reason for this is that the price of non-fillet products in Southern Europe under Scenario 2 markets is higher than in South Africa's fillet and non-fillet Scenario 1 markets. This progression is logical and rational from a business point of view in the light of the loss of MSC premium prices in Scenario 1.

In year 3, under Scenario 3, only the export market is affected. We assume a change in the product type distribution being exported from South Africa, replacing some of the value-added products by non-value-added product. Our estimate for the domestic market is the same as for Scenarios 1 and 2 at R0.652 billion. The export market is estimated to now be worth R1.359 billion, quite similar to Scenarios 1 and 2. Total fishery value = R2.011 billion. The loss is R0.860 billion, 30% of current levels (Table 8).

In years 4 and 5, under Scenario 4, both domestic and export markets are affected. The assumption is that a large proportion of SA exports are shifted to the domestic market. At the same time, we simulate a change in the product type distribution for that portion of the domestic market not previously supplied. The value estimate for the domestic market is R0.922 billion. The value estimate for the export market is R0.390 billion. The total value of the fishery is R1.312 billion. The loss is R1.559 billion which is 54.3% of the present value (Table 7).

Table 8: Breakdown summary of the estimated value of the hake fishery under the 4 scenarios by market and product types.

		Current situation				Senario 1			Senario 2			Senario 3			Senario 4			
		Non-Fillets	Fillets	VAP MSC	Total	Non-Fillets	Fillets	Total	Non-Fillets	Fillets	Total	Non-Fillets	Fillets	Total	Non-Fillets	Fillets	Total	
Domestic Market	Volume	Gwt equ. ('000 tons)	14.4	19.7	4.7	38.8	14.4	24.4	38.8	14.4	24.4	38.8	14.4	24.4	38.8	71.6	30.8	102.4
		(% change from current)					(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(+397.5%)	(+26.1%)	(+163.9%)
	Value	million US\$	32.5	42.9	12.6	88.0	28.0	34.7	62.7	28.0	34.7	62.7	28.0	34.7	62.7	50.5	38.2	88.7
		million Rands	338.3	446.4	130.6	915.3	291.6	360.5	652.1	291.6	360.5	652.1	291.6	360.5	652.1	525.0	397.3	922.3
	(% change from current)					(-13.8%)	(-37.5%)	(-28.8%)	(-13.8%)	(-37.5%)	(-28.8%)	(-13.8%)	(-37.5%)	(-28.8%)	(+55.2%)	(-31.1%)	(-)	
Export Market	Volume	Gwt equ. ('000 tons)	33.1	29.0	27.1	89.2	33.1	56.1	89.2	40.7	48.5	89.2	79.5	9.7	89.2	22.8	2.8	25.6
		(% change from current)					(-)	(-)	(-)	(+23.0%)	(-13.6%)	(-)	(+140.2%)	(-82.7%)	(-)	(-31.1%)	(-95.0%)	(-71.3%)
	Value	million US\$	54.9	56.1	77.1	188.1	45.7	88.8	134.5	58.7	76.6	135.3	115.4	15.3	130.7	33.1	4.4	37.5
		million Rands	570.7	583.9	801.7	1,956.3	475.4	923.3	1,398.8	610.4	796.6	1,407.0	1,199.8	159.3	1,359.1	344.3	45.7	390.1
	(% change from current)					(-16.7%)	(-33.4%)	(-28.5%)	(+7.0%)	(-42.5%)	(-28.1%)	(+110.2%)	(-88.5%)	(-30.5%)	(-39.7%)	(-96.7%)	(-80.1%)	
Domestic + Export Markets	Volume	Gwt equ. ('000 tons)	47.5	48.7	31.7	128.0	47.5	80.5	128.0	55.1	72.9	128.0	93.9	34.1	128.0	94.4	33.5	128.0
		(% change from current)					(-)	(-)	(-)	(+16.0%)	(-9.4%)	(-)	(+97.7%)	(-57.6%)	(-)	(+98.8%)	(-58.3%)	(-)
	Value	million US\$	87.4	99.1	89.6	276.1	73.8	123.4	197.2	86.7	111.3	198.0	143.4	50.0	193.4	83.6	42.6	126.2
		million Rands	909.0	1,030.3	932.3	2,871.7	767.1	1,283.8	2,050.9	902.0	1,157.1	2,059.1	1,491.4	519.8	2,011.2	869.3	443.1	1,312.4
	(% change from current)					(-15.6%)	(-34.6%)	(-28.6%)	(-)	(-41.0%)	(-28.3%)	(+64.1%)	(-73.5%)	(-30.0%)	(-4.4%)	(-77.4%)	(-54.3%)	

A discount rate of 10% was used to estimate the Net Present Value (NPV) of the fishery with and without MSC certification. The five year NPV of the fishery with MSC certification is estimated to be R10.89 billion (Table 9). In the absence of MSC certification, using the four scenarios approach, the estimate is R6.79 billion. The difference is R4.10 billion, which is 37.6% of the 5 year NPV with MSC certification in place.

Table 9: Overall summary of scenarios and NPV calculations at a discount rate of 10% and under different exchange rate assumptions.

NPV calculation over a 5 years period with a discount rate of 10%	exchange rate of R10.40/US\$		exchange rate of R14.00/US\$		exchange rate of R12.00/US\$		exchange rate of R8.00/US\$	
	Billion Rands	% change from base line	Billion Rands	% change from base line	Billion Rands	% change from base line	Billion Rands	% change from base line
NPV of the SA Hake fishery after 5 years								
status quo (baseline from years 1 to 5)	10.89		13.45		12.03		9.17	
scenario 1 in year 1, 2 in year 2, 3 in year 3 and 4 in years 4 & 5	6.79	-37.6%	8.16	-39.3%	7.40	-38.5%	5.87	-36.0%
Estimated cumulated loss based on the successive occurrences of scenarios 1, 2, 3 and 4 in years 4 and 5 vs. baseline in years 1 to 5								
after 1 year (scenario 1)	-0.75	-28.6%	-0.92	-28.6%	-0.82	-28.6%	-0.63	-28.6%
after 2 years (scenario 1 then 2)	-3.28	-28.4%	-1.75	-28.4%	-1.57	-28.4%	-1.20	-28.5%
after 3 years (scenario 1 then 2 then 3)	-2.06	-28.9%	-2.55	-28.9%	-2.28	-28.9%	-1.74	-28.9%
after 4 years (scenarios 1 then 2 then 3 then 4)	-4.64	-34.4%	-3.99	-35.4%	-3.51	-34.9%	-2.56	-33.3%
after 5 years (following scenarios 1, 2, 3 & 4 the last 2 years)	-4.10	-37.6%	-5.29	-39.3%	-4.63	-38.5%	-3.30	-36.0%

CONCLUSIONS

The recent history of hake markets around the world and of the role played by MSC certification in creating new opportunities in export markets has helped to sustain the value of the South African hake fishery at current levels. Traditionally the Spanish demand for relatively low added value hake product accounted for a large proportion of South African hake exports. However, over the last few years, the widely documented financial and employment crisis in Southern Europe has led to a sharp decline in Spanish demand for hake.

The loss of traditional export markets in Southern Europe forced the industry to seek far more competitive avenues in Northern Europe where hake commodities tend to be sold at a premium price. The South African industry successfully managed to take advantage of some of the crucial features of these new markets. Increasingly, these higher priced European markets prefer added value whitefish products in small portion sizes that can be traced to sustainable sources. This coincide perfectly with the existing South

African Hake business model which relies on value added products. Without MSC certification, these markets would be virtually inaccessible.

We estimate the current value of the South African hake fishery to be just over R2.871 billion assuming a USD – ZAR exchange rate of 10.4 and a production at the 2012 catch level of 127,974 GWt.

The loss of MSC Certification will lead directly to exclusion from vital, sorely won overseas outlets on which the present day industry is heavily dependent. The loss of valuable primary export markets will lead to an oversupply of hake on the domestic market.

It is difficult to estimate the economic and social benefits of MSC certification for the Hake trawl industry because we cannot be certain about how exactly the industry will perform and settle into a new equilibrium in the absence of MSC certification. We have attempted to address this query using a scenario approach in which four successive scenarios are postulated and then quantified as best possible with available data.

We found that under each scenario considered independently, the value of the South African hake trawl industry would contribute to South Africa's GDP at a much lower level than it does at the moment, declining by somewhere between 28.3% and 54.3% of the current estimated value of R2.871 billion, depending on scenario. This translates to a direct contribution due to MSC certification of between R0.81 billion and R1.55 billion. For example, under Scenario 1, we estimated a direct contribution of MSC certification through access to premium markets and price premiums of 28.6% of the current value of the fishery.

These estimates are likely to be relatively conservative. For example the worst case scenario considered here (Scenario 4) assumes that a large quantity of current exports would be shifted onto the domestic market, increasing the local supply of hake by 164% without any bloodbath, (Bross C. A., 2013).

It is hard to say what the overall impact of loss of MSC certification might be without combining the short and medium term impacts following loss of certification. We have therefore combined the impacts of successive scenarios over a period of 5 years by simulating the following impacts: first year: the loss of price premium, second year: the loss of access to premium markets, third year: substitution in the product mix from added-value to basic product types, fourth and fifth years: a dramatic shift of export volume into the domestic market.

By comparing the estimated hake fishery's value under each scenario and using a Net Present Value (NPV) approach with a discount rate of 10% over a 5 years period and assuming an exchange rate of R10.4/US\$, we estimate the medium term economic benefits of MSC certification to be R4.1 billion, which is 37.6% of the current estimated medium term value of the fishery of R10.89 billion (i.e. under MSC certification sustained for the next 5 years).

According to (IntraFish Media, 2012a), without MSC certification, the South African hake fishing industry stands to lose 5,000 jobs. We assume that this estimate refers to jobs within the industry itself, including processing establishments, and does not extend to employment in secondary industries supplying goods and services to the hake industry. The BER estimates that the loss of employment would be in the region of 10,000 jobs in the fishing industry as a whole (BER, 2013) – we understand that this estimate includes employment in secondary industries supplying goods and services to the hake industry, as well as tertiary industries, i.e. the full feed through effects via best estimates of economic multipliers. SADSTIA estimates that loss of access to premium European markets would have its greatest employment impact on skilled workers (SADSTIA, 2013). Our crude estimates shows a labour force of 4,378 workers involved in the hake processing sector in 2012. We estimate that under the current situation, 63% of the production (greenweight equivalent) can be attributed to fillet products. We then simulated that, under our Scenario 4, following the loss of premium markets, fillet products would only account for 26.2% of production. This could translate in a loss of as many as 1,421 skilled workers, or 32.5% of those employed in the hake processing sector. Many of these employees are the sole female breadwinners in single parent families.

It is appropriate to mention a number of additional potential sources of collateral damage that might be incurred as a result of the loss of MSC certification. This includes the disinvestment in productive capital especially in the processing sector and a negative impact on the image of the South African seafood export sector in export markets. In our view the economic turmoil experienced by businesses involved in hake production and processing would spread to other sectors of the South African fishing industry. An important example would be a sharp decline in the price fetched for non-whitefish longline products, and/or a decline in the demand for line fish. Here again, the most vulnerable will feel the brunt of the impact, in this case coastal communities reliant of line-fishing of one sort or another.

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