# Modern Trends in Agriculture and Seafood Value Chains

**Henk Stander**
**Aquaculture, Department of Animal Science, Faculty of AgriSciences, University of Stellenbosch**

An argument can be made that every effort should be made to convert low-value fish into foods for direct human consumption rather than the inefficient conversion into fishmeal and then food fish via aquaculture. This argument is based on economic and ethical (Sustainable Development) ideas. For example, the small trash fish form part of the food chain for the larger (human food) fish, and their removal will hurt the overall fishery. Secondly, converting the trash fish into fishmeal requires intensive high-energy processes not matched by the food value of the products. However, converting the trash fish into added-value products acceptable to the consumer may require energy, which must be justified by the consumption of the products.

These arguments are at the heart of the Sustainable Development debate in the Fish Processing Industry and require a set of rigorous standards of comparison for judgments to be made in terms of inputs (energy, water, and technology) and outputs (product type, consumer preference, and volumes of product) and the management of both (a full Life Cycle Analysis in other words). Products based on traditional fermentations under ambient conditions might be energy efficient, but the products have limited applications as food.

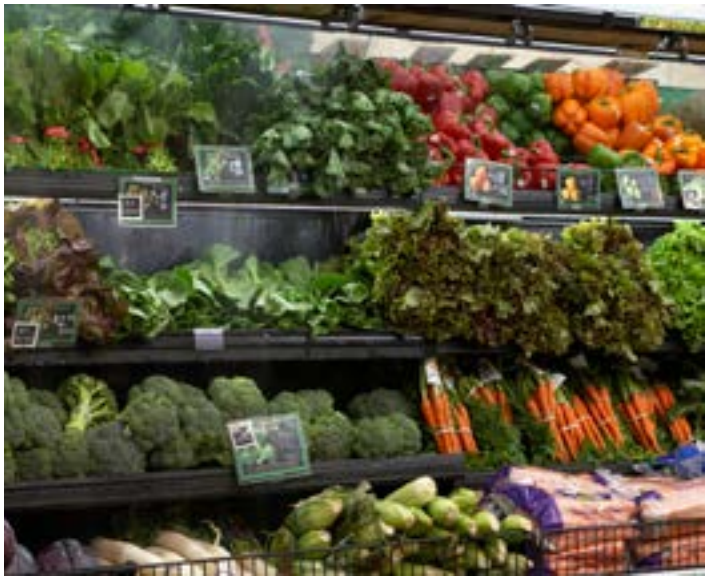
Beneath a calm surface, the fish and seafood value chains and certain packaging material trends are undergoing radical change.

**What are value chains?**
Value chains include all the activities that firms undertake to bring a product or a service from its conception to its end use by final consumers. Seafood Value Chains cover all seafood upstream, midstream, and downstream sectors from the supply of seafood inputs to the production, handling, transportation, processing, and retailing of seafood products. Within such chains, relationships between the seller and the buyer can take various forms: the spot market, long-term informal relationship, capital investment by the buyer to the benefit of the producer, or full vertical integration.

Value chains are normally driven either by the producers or by the buyers. Producer-driven chains are led by capital and technology-intensive firms that control the design of the products, and most of the assembly as well. Buyer-driven chains characterize labour-intensive industries predominantly led by large retailers and branded marketers that source products from independent suppliers. They rely on little capital and few skilled workers. In agriculture, contract farming which involves contractual agreements between farmers and buyers is the most common buyer-driven value chain model. Financiers often finance buyer-driven chains as they are more structured and integrated which reduces financial risks.

## Consumer desires:

**Desire 1: Lead a healthy life**
Most of us today have a desire to lead healthy lives and our awareness of the benefits of



fruit, vegetables, and healthy food is high: countless "5-a-day" information campaigns have promoted fruit and vegetables as fresh, healthy, tasty, sustainable and attractive foods. We see them in increasingly attractive retail displays, in food blogs, and on our social media feeds – but this does not necessarily mean that they are appearing more frequently on our plates. Overall, the health trend is not powerful enough to grow the entire fresh produce market in terms of volume. So where is the growth?

Growth is found in premium vegetables, fruits, and berries that are loaded with nutrients and delivered fresh and tasty. As an example, kale has experienced a revival thanks to the vitamins, antioxidants, and minerals that it contains, but also thanks to its popularity on food blogs and social media feeds filled with inspirational recipes. The same can be true for a specific seafood species or product.

**Desire 2: Better quality of life**
Consumers want it all. Urbanization makes people's lives more complex as they are faced with more opportunities and choices but with less time on their hands. This motivates consumers to choose solutions that simplify things and save time. At the same time, consumers want tastier fruits and vegetables and even more exotic novelties to indulge in.

**Quality of life as a value driver.**
Growth has been seen in the consumption of semi-prepared freshly-cut fruit or salads made for a modern time-constrained lifestyle. These products are consumed on-the-go, as a quick lunch or as part of a dinner. Retailers are seeing that consumers are willing to pay more for tastier and more exotic products which are being more premium.

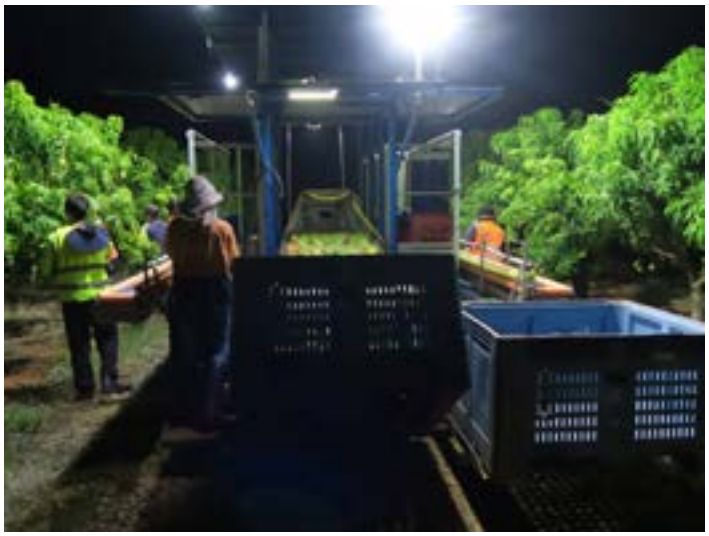
**Desire 3: Save the planet**
Levels of fruit and vegetable food waste are exceedingly high. Nearly 50% of all fruit and

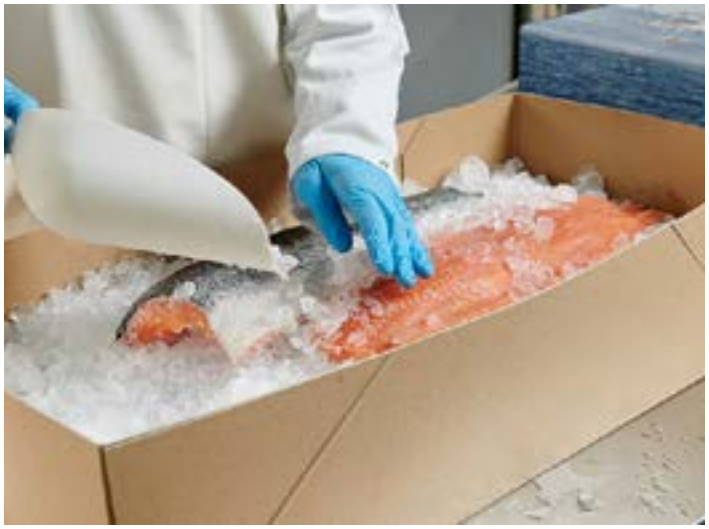
vegetables produced in Europe go to waste. Despite high levels of awareness, the biggest culprits in Europe are consumers – one in five fruit and vegetables are wasted after purchase. Fresh produce consumers are not only concerned about food waste, but they are also generally sceptical about packaging in this category.

**Sustainability as a value driver**
However, if packaging can enhance shelf life and therefore reduce waste, consumers have a positive attitude towards it. Moreover, they want the packaging itself to be sustainable. Fibre-based packaging, such as corrugated cardboard or carton board, is considered by most consumers to be the most sustainable choice.

**Vertical integration:**
Vertical integration has been driven by the need for traceability and food safety or quality. It has also been boosted by the need for downstream players to reduce their environmental, social, and governance risks and to secure their supply of raw commodities. Vertical integration is expected to continue mostly between production and processing and through long-term engagement with suppliers rather than mergers and acquisitions. The commodities that tend to be vertically integrated are mainly those destined to export, whose supply is limited, that present significant environmental, social and governance or food safety risks, that require large investments or for which existing agricultural value chains are highly informal and inefficient. Downstream actors tend to control agricultural production for commodities that are easy to produce, perishable, or require quick processing.

While vertical integration is prominent in developed countries, it is still progressing in developing countries, especially in countries with fragmented agricultural value chains, a

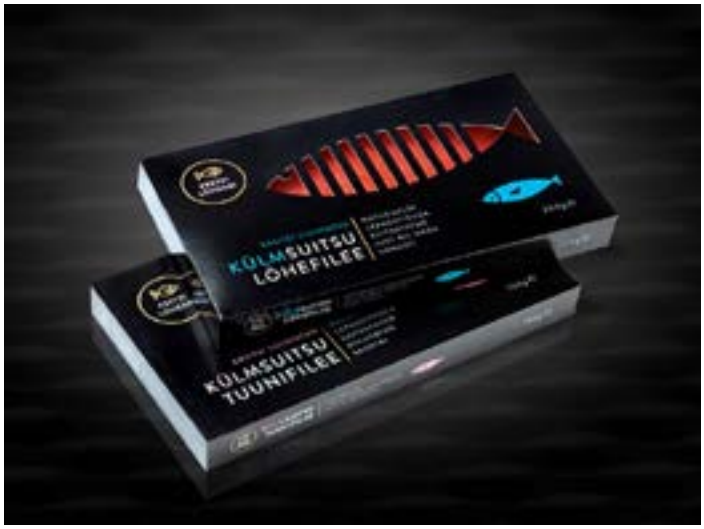




lack of infrastructure, and a weak regulatory environment, as vertical integration can help overcome these constraints. In terms of impact, successful integration can strengthen value chains and make them more effective, which benefits both upstream and downstream actors. It can improve farmers' livelihoods by securing their access to reliable, high-paying markets as well as to credit, inputs, and technology. However, it can also lead to the marginalization of small-scale producers or the loss of their independence.

**Consolidation:**
Consolidation is set to accelerate, mostly through acquisitions, driven by the need for companies to improve their positioning against competitors. Different segments of the agricultural value chains are undergoing consolidation in developing versus developed countries: production and processing in the former and input supply and retailing in the later. Consolidation occurs mainly for commodities that benefit from economies of scale in production or which require significant investments – such as bananas, pineapples, palm oil, or swine production. In terms of impact, consolidation can foster the sustainable production of a wide range of products, as well as the production of marginal products that would otherwise not be profitable for one small company. It can also enhance product quality, especially for animal products that require strict food safety and quality controls. However, it can result in large farms with significant negative environmental impacts.

**Retailers expectations:**
Retailers are looking at markets like the UK to see where the fresh produce category is heading. The road seems to lead to more rather than less packaging. Selling products like tomatoes in packages allows retailers to charge per package instead of per kilo which can create a completely different perception of price, with consumers being less able to compare prices. Packaged fresh produce becomes less of a commodity as the quality and freshness can be increased. Besides,



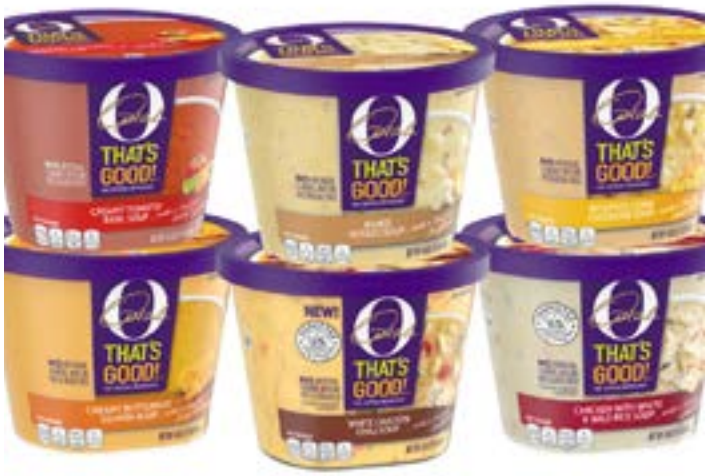

there is room for branding and differentiation. Waste during transport or warehouse handling is generally extremely low. However, in-store waste levels are significant. Five percent of the category's value is considered a good average waste level, but the percentage varies greatly between different fruits and vegetables. Packaging that prolongs shelf life can provide substantial cost savings.

**Packaging innovations:**
Both retailers and brand owners should consider how packaging could help them to build value in the fresh food category.

**Field-to-fork packaging design**
Tastier premium experience thanks to the packaging. Consumers want healthier, fresher, and tastier fruit and vegetables. Smart packaging can help to speed up the supply chain so that products can be delivered in a better condition with more of the taste and nutrients intact.

**From fresh to fresh-cut**
Packaging for busy, convenience seeking shoppers. Mini carrots, celery sticks, tossed salads, fruit salads, and smoothies are all examples of the premiumization of fresh produce. Live mussels and oysters in trays and seafood ready to eat complete meals are some of the trends in the seafood product range.  The downside of introducing more variants of prepared and packed products is the increase in complexity for consumers and store handling costs. Shelf-ready packaging can help consumers to shop by organizing crowded shelves and providing inspiration and information about the products and their value propositions. Besides, it can help shops by making shelf replenishment easier as well as keeping products in their place.

**More shelf life and less waste**
Corrugated cardboard adds three days of freshness. The idea of reducing food waste by using more packaging is a contradiction in terms as the packaging itself has an environmental impact. Plastic packaging

made from fossil-based materials not only adds to the carbon footprint, but it is also not renewable. Corrugated packaging from responsibly-sourced wood fibres is a renewable and sustainable packaging solution. However, returnable plastic crates are increasingly used to transport fresh produce. A recent study by the well-respected University of Bologna shows evidence that this trend may lead to more food waste. The study found that corrugated packaging reduces microbiological contamination compared to returnable plastic crates, thereby prolonging shelf life by up to three days.

**Conclusion:**

With the easing of the lockdown restrictions, the Agricultural and Seafood market will regain lost growth momentum. Seafood will remain a healthy food option and an indulgent treat and mainstay of salads in luxury dinners and food parties. Continued developments in aquaculture and the ensuing availability of wider product choices will spur growth, alongside the growing focus of governments worldwide to utilize fisheries to achieve food security goals. The focus on reducing fish waste and losses and a rise in sustainable and responsible fisheries management will positively benefit growth in the market by ensuring easy physical and economic access to sufficient, safe, nutritious, and affordable seafood products.

***References:***


- Hall, G.M. Fish Processing: Sustainability and New Opportunities. Wiley-Blackwell, 2011.
- Seafood Packaging Market – Global Industry Analysis, Size, Share, Growth, Trends, and Forecast, 2019 – 2027. February 2020.
- Trends in Agricultural Value Chains: Vertical Integration and Industry Consolidation, responsibility. Report on a survey carried out in 2017.
- ViewPoint: A periodical insight publication from the renewable materials company. (www.storaensopack.com)
- Pictures from Google images


**Contact the author:**


**hbs@sun.ac.za**