The fish factory in the sky

It sounds like real life imitating television; when Chris Morris introduced us to the idea of ‘vertical tube farming’ on The Day Today it was a definite spoof, but today a similar (albeit not quite so far-fetched) towering idea is becoming a genuine trade in many overseas countries where space is at a premium.

Do an internet search for ‘fish farms’ and you’ll see images of traditional structures floating in harbours, or at the very least you’ll find ones built in a conventional and horizontal fashion on land. In the main, Hong Kong has been no different but if a crisis in the local fishing industry is to be averted then there needs to be a fresh look at how its fish arrives on its diners’ plates. In an area where the buying and selling of live fish is worth a billion dollars a year there is precious little land left for the purpose of breeding and raising livestock; out of 426 square miles only seven of these can be used for active farming purposes. The rest is urban dwelling for its seven million inhabitants, hills or mountainous regions and country parks or nature reserves. In densely populated Hong Kong, for new fish farms the only way is most definitely up.

And the reason that the need to find new farming methods has moved in this new direction (literally) is due to the depletion of stock levels in the waters around Hong Kong. Years of over fishing have left the seas surrounding the island with less, and indeed, smaller fish and a complete ban on the destructive practice of bottom trawling in the special administrative region was put in place at the end of 2012. With this in force the sea beds can recover from the damaged sustained from the intensive fishing that has taken place there and the marine life has the chance to replenish itself.

All well and good ecologically speaking, but that does lead to questions regarding the continuing provision of seafood to Hong Kong. The cuisine that the region is renowned for underpins a thriving business to locals and tourists alike, and its hotels and restaurants still require a regular supply. This demand, particularly for the white-fleshed grouper, has led to several small businesses thinking differently about how they can fulfil that need.

One such company, OceanEthix, has recreated deep sea conditions on the fifteenth floor of a Shatin tower block in the New Territories and from this sells around two tonnes of grouper to wholesale buyers every week. Their environmentally friendly aquaculture system is housed in 11 plastic tanks which hold salt water; 80,000 litres of the stuff in fact. Six employees care for the baby grouper that are placed in these tanks and then allowed to mature for between 10 and 13 months until they reach the optimum weight for sale at the markets. Blue lights fill the room and illuminate the fish tanks, in an effort to replicate the dark conditions of the ocean.

Whilst water recycling for aquaculture in Hong Kong is not unique (there are a number of small firms also raising fish in this way) the unique selling point of OceanEthix’s business seems to be their pioneering no-waste treatment. Unlike other systems, which require 10% or more fresh water from an outside source each day and which also need to rid themselves of the soiled water produced, the company’s ATOLL system reuses 100% of the water that the fish occupy. Despite the fact that each tank (or ‘module’) produces approximately 17.5 kilos of fishy discards every month, OceanEthix’s website boasts of its ‘zero waste discharge technology’, as all matter is treated within the system before being filtered through to the tanks again.

They also use sustainably sourced fish feed, as opposed to the frowned upon tradition of ‘trash fish’ (fish caught specifically to be fed to the growing stock in fish farms).

When you look at the fish industry in Hong Kong it’s easy to see why businesses are making an effort to continue aquaculture activity in this new environment. For every kilo of grouper OceanEthix raise they can expect to receive as much as £60 (that’s 776 HK dollars or 100 US dollars) for it. The price for wholesale fish has rocketed for the past five years - rising between 10 and 15% every annum - and the going rate for live grouper is far higher than for any other quality fish. On top of this, fish that are raised in an eco-friendly way can also expect to have a premium put on top of that if they meet the requirements of China’s ‘Green Food’ initiative.

And it’s not just the fish themselves that keep OceanEthix in business; they also sell their water recycling plants to companies across Asia who have cottoned on to the benefits of high-rise fish farms; i.e. being able to produce large volumes of stock without needing huge amounts of space to do it in. A system that can be retrofitted into already existing buildings - making them ideal for the centre of busy cities – and that has no need for a continuing input of high volumes of water seems like it could very well be the start of a whole new era for some of the continent’s fish farmers.

Moving farmed fingerlings inland would often lower distribution costs, and the innovative technology that can now be used to simulate the ocean for the maturing fish is both efficient and environmentally friendly. And, of course, the farms are unaffected by bad weather; storms, raging winds and dangerous waves would not affect the fishes’ ability to be ‘caught’ and taken to market to be sold. A further ecological advantage would be that the many abandoned buildings that litter most towns and cities could be transformed into money-making ventures instead of sitting empty.

The South Korean government have also taken steps to move their fishing industry skywards; growing demand there has led to them following the example set by OceanEthix and looking for a multi-story answer.