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Singapore's Nascent Urban Farming: Potential Future Regional Centre?

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Synopsis

Singapore signalled strong support for its urban farming industry by tendering 24 hectares of land for high-productivity vegetable farms in 2017. Foresighted action is now needed to reduce risk to leafy vegetable producers and to fulfil the sector's commercial potential. Can it be a future regional centre for urban food production?

Commentary

VERTICAL FARMING is one among the technologies transforming agriculture today. Vegetables are grown on multiple layers, and its innovative version, the indoor vertical farm, run with computer-optimised LED lighting, growing environments and water/nutrient supply. These are making urban farming more profitable, such that governments are realising its potential to create jobs and value-add to the economy, apart from enhancing urban food security.

Staking the future of urban farming on these technologies, Singapore tendered 12 plots of land exclusively for high-productivity leafy vegetables (two hectares each), as 20-year leases in 2017. Singapore will likewise be repositioning itself, reinventing the Agri-Food & Veterinary Authority (AVA) into the Singapore Food Agency (SFA). It will have a mandate to collaborate with economic agencies in fostering a vibrant urban farming industry that can be relied on to not only enhance the robustness of city-state's food system, but also contribute to economic growth.

Undersupply or overinvestment?

AVA's tender results, announced in 2018, showed that out of 12 plots of land, only 10 plots were actually leased out. Out of over 28 bidders, only eight Singapore-based

companies which have historical high-yield performance won these tenders, with one company even acquiring three plots.

From a traditional food production perspective, one may think that less plots tendered out means less locally produced food. However, technology has so changed farming, that less land no longer means less production. Ironically, our RSIS NTS Centre Report found that the risk is that more land may have been leased out than can be viably used for indoor farm purposes.

It showed that less than half of the plots taken up (between one and four plots) could be viable investments within a 20-year investment period, assuming that these new farms utilise similar indoor farming systems as simulated in the Report (14 layers or tiers of plants, grown on two- to three- storey buildings), and that they compete for the highest priced imported vegetables.

Risks to Businesses

No opportunity comes without risks. A key risk in the scenario spelled out above is 'competitive risk', or the risk that companies self-defeatingly compete for the same product.

To value-add to the economy while enhancing food security robustness, new farms will expectedly seek to replace imported vegetables with local production, a strategy known as 'import-substitution'. This strategy has its limits, however, because demand for leafy vegetables in Singapore is finite. For instance, lettuce and chicory imports last year were approximately 17,000 tonnes, making up only less than a fifth of total leafy vegetable consumption.

Thus, if companies aim to replace imports of this same vegetable with local production, an over-supply can occur; this applies especially in the case of the highest priced vegetables.

This translates to the risk of having lower revenues than expected.

This then translates to 'liquidity risk', when lower-than-expected revenues prevent companies from making timely payments for their loans and other financing costs. This risk is punctuated in the case of indoor farms because of their capital-intensive nature, requiring significant amount of financing to set them up.

Risk Exposure of Government

Optimistically, the companies who won the tender may have already considered these risks before they made their investments. However, these risks could potentially spill over to the government, because government has co-invested in some of the technologies relevant to these farms.

For instance, since 2014, AVA's S$63 million Agricultural Productivity Funds (APF) have allowed businesses to benefit from as much as 70 per cent co-investment by government in new technologies for boosting farm productivity.

It is likely that indoor farms qualify for these funds, as the APF cut-off is a four-time increase in productivity, whereas indoor vertical farms can potentially have more than five times productivity, as they can grow on five or more layers, apart from further gains from better optimised growing environments.

Way Forward: Policy Options

To reduce investor uncertainty, a critical priority is to use the information given by the new lease-holding companies when they were bidding for land, to assess the potential production capacity (for specific crops), profitability and commercial viability of these farms. This information can then be analysed, alongside trade statistics on historical leafy vegetable import and/or consumption growth trends, to gauge the likelihood of an over-supply.

Established academia and industry players will also play an important role in supporting this new industry. For instance, in preparing the aforementioned RSIS NTS Centre Report, the authors of this piece developed a supply-side tool, the *UrbanAgInvest*, for preliminary commercial assessment of indoor farms, under the ambit of the RSIS NTS Centre, Nanyang Technological University (NTU, Singapore). This was further tailored for investors through an exploratory collaboration effort with the Enterprise Development Group at Temasek International.

There are also actions that can be explored to reduce risk. One is to alter the permitted uses in the tendered property, beyond leafy vegetable production purposes, allowing other items to be produced. It can also re-focus the APF by co-investing with companies in technologies that support lower priced crops more cost-effectively, to reduce the number of producers competing for the most expensive crops.

Government may also co-invest in technologies that increase the quality, cleanliness and appeal of these crops, to better address local supermarkets', restaurants' and retailers' needs. Beyond local needs, the APF may also be used to develop tailored crops that meet the needs in overseas markets.

Foresighted actions above, shared in an earlier NTS Insight publication, can be explored in addressing risks and uncertainties in the 2017 tender. This could establish Singapore's position as a centre for urban food production in the region, as Minister Lawrence Wong boldly called in 2017, leading the way for other fast-urbanising countries in Southeast Asia.

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