

Cold-chain value systems and options to be considered by planners.

1. The strategic business interest & capability of any concerned enterprise will define the scope and extent of the value chain of each such enterprise. Frankly, the involved models are easily differentiated and would extend across the following two basic categories-

- a. **Uninterrupted farm-to-fork sourcing and distribution** of agricultural produce, especially perishables, wherein the fresh whole food does not undergo any change to its primary and natural characteristics. This value chain system is empowered with the agri-logistics intervention that services an out-reach into multiple markets through connectivity. This market link is key to generate a revenue stream that is volume based, and in turn feeds improved post-harvest handling, resultant growth in produce quality & productivity and also offers scope to stabilise demand-supply fluctuations.



This model comprises value chains that complete the direct farm-to-fork connectivity and relies majorly on pack-houses and transportation to precondition the harvest, connect with cold stores which serve as a front end hubs for the logistics activity, and onwards to last mile retail.

The entire logistics chain seamlessly extends from farm-gate to multiple consumption centres, across regions. There is no interference with the primary and intrinsic values of the fresh food, as it does not undergo any transformative change or food processing. Collaboration among cold-chain asset owners is a norm. This unbroken value chain system is most prevalent globally, and is almost non-existent in the domestic arena.

- b. **Interrupted sourcing and distribution** of produce, primarily of two types-

- i. Suitable raw material is sourced for industrial processing units for transforming into a manufactured food item. An interruption in the food distribution chain occurs in way of a food factory wherein the primary natural characteristics of raw produce is effected through ingredient additives, physical or chemical change, etc., so as to change the fresh produce into a new product with a revised value. The product is no longer characterised as fresh whole food, and is subject to predetermined expiry, labelling and value added tax compliance. This value chain is not about seamless custody of value from farm-to-fork, typically relies on sourcing culled produce and/or sourcing special cultivars through contractual arrangements in case of perishables. The key cold-chain intervention is normally in the form of primary storage which may be captive to an industrial facility, to feed the processing line(s).



The output from the production lines may not require subsequent cold-chain intervention. This form of interruption in the value chain is unmistakable in the food processing industry in cereals, potato, tomato, beverages and similar sectors. With new processing technologies being researched, more developments can be anticipated, though conversely, a greater demand for fresh whole foods is also foreseen due to health concerns. To a large extent, this value chain system is market linked or demand driven, is highly competitive and its development is well established. The product value realisation is not directly linked to farmers, as the value of the harvested produce is broken, and the primary value is interfered with.

- ii. Bulk inventory holding of fresh farm produce for a delayed or timed trade. The intended use is to buffer against episodic production and supports a price arbitrage trading model, making it partisan to a propensity to control supply. The primary cold-chain intervention is in the form of standalone static infrastructure (cold warehousing), quite prevalent in case of potatoes and spices where no other cold-chain connectivity is employed. If ownership of produce remains in farmers custody, value realisation to farmers is possible. This value chain system is opportunistic and commonly established by traders or by Government for crops subject to MSP (case of food grains, this manifests as stocking surplus for food security or trading purposes). The delivery system is interrupted, value is kept pending the "right time".

In both above value chain systems (1a, 1b), the primary value being engaged is the farm produce or a manufactured product, with logistics being a tool to facilitate the trade. To unlock the value chain to its fullest extent, the strategic business interest needs to manage multiple activity components of the involved supply chain, especially in the case of direct farm-to-fork supply of fresh perishables.

2. In the first model, the business is that of managing the perishables supply chain, and the primary and preferred intervention is to expand market access through a seamless logistics network, rather than holding inventory for deferred trade and raising complex inventory holding risks. For greater benefit of farmers, the objective of promoting uninterrupted logistics, so as to expand market footprint is understood to be more beneficial. Expanding the supply chain systems also helps to stabilise demand-supply mismatches.

In cases where the infrastructure developer is not integrated with the produce centric value chain, such a developer's scope is automatically limited to the realisation received from rental charges from the logistics infrastructure created. This limited approach is distinct in the non-cold-chain logistics sector and has been the precursor in domestic cold-chain development. Since cold-chain can have direct impact on produce longevity & quality, price realisation and source production, it is recommended that cold-chain be strategically furthered under the first model (1a - uninterrupted logistics) and variations thereof. This primarily means developing many more pack-houses with pre-coolers and at the least, quadrupling our reefer truck fleet along with multimodal rail options. This also means an investment in multiples of what was conventionally expected.

3. Poor capacity utilisation is oft spoken of, but as in any business, it arises from unconsidered location or design of the infrastructure, or from over ambitious evaluation of capacity and resources required, or from flawed market linkage and operative models. Poor capacity utilisation is more common in the single commodity

storage model, where capacity use depends on vagaries of a single harvest. This model depends on sourcing produce in a season of glut for deferred and timed trade and like all commodity trade, the model is more sensitive to supply dynamics. However, it is pleasing to note that as per a recent 2014 baseline survey of cold storages nationwide, the respondent owners report having achieved, on average, 74-75% capacity utilisation every year over the previous 3 years. This survey had first-hand participation of 93% of the cold stores (more than 5000 units) open for service/lease, and did not include the storage created specifically for an organisation's captive use.

It is also to be noted that the majority of cold-chain businesses developed with Government support, by various private enterprises, are known to have met success, resulting in growing trade of the produce and in turn has promoted high productivity in those areas. This can best be illustrated in the case of grapes, which resulted in India reaching topmost in grape productivity, globally. Yet, units set up as 'common infrastructure' by State Government agencies, have not met similar success.

4. The recently revised and rationalised incentives along with the low interest Warehousing Infrastructure Fund are aimed to promote wilful entrepreneur participation across the multiple infrastructure components, that are necessary for building integrated logistics chains. The scheme does not ignore the existing infrastructure footprint, and allows modernisation in technology.

The revised scheme for cold-chain, allows component development for collaborative uses as well so as to develop further the eco-system. This will lead to unlocking the value system to its fullest extent as other developments are simultaneously undertaken.

There is no restriction, other than technical constraints, to multi-commodity uses of the infrastructure developed - the schemes do not restrict synergistic use for non-horticulture or non-agri products. It may also be noted that the norms based subsidy schemes are open ended and designed to strategically promote components for operational & energy efficiency and to multi-modal handling across both existing and new infrastructure. Users can therefore develop as per operating needs and expand their value chain.

Government schemes are aimed to provide incentive so as to strategically drive development in specific domains and missing components in the logistics chain. Objective of such incentive/subsidy is to promote conformity for future ready distribution networks, environment safe guards and energy efficiency and promote long term operational viability

5. Cold-chains are value chains that are not to be viewed as restricted to a cachement cluster, but are most effective when they break the regional or distance barrier. Hence, cognisance should be taken to develop cold-chains that span multiple states and regions, rather than a specific area - an integrated value chain approach, across regional boundaries is preferred.

6. The financing options for a cold-chain developer are various. These include low interest funds from NABARD, norms based subsidy as an incentive to adopt efficient technologies, FDI, PPP-VGF option, commercial banks, etc.

7. A complete cold-chain (integrated uninterrupted variety) requires the ability to manage components at multi-locations (across States) and involves transport operations. This refers to the need to have thousands of pack-houses - the clear missing links in the cold-chain. Specifically this requires village level pack-houses with modern pre-conditioning facilities and with the associated transport links.

The Government's VGF scheme seems to be a worthwhile option for enterprises to take advantage of, and develop a cross regional spread of multiple pack-houses with transport. To fulfil VGF norms, these will require to be operated as a service for local farmers, with the viability gap in service fees and their seasonal utilisation being assessed for gap funding. Effectively, the concessionaire will be able to spearhead supply chain practises and market linkage, with associated capacity building at near farm establishments.

8. Enterprises can also seek to develop businesses that will spearhead rail/road/multi-modal transport options for cold-chain. Large scale transport connectivity through a VGF-PPP model for long haul rail/road/water movement is a worthwhile consideration. This will immediately network the vast sub-continent to access fresh food from various growing areas.

9. The concept of developing an All India Cold-chain Availability Platform (ICAP), as an IT enabler that delivers information on spare and active capacity, piped into public domain for access by users and government agencies, is also an opportunity for many.

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On a national level, the objective to boost rural incomes (by reducing spoilage or through increased value addition), could best be served by providing cross regional logistics connectivity, thereby empowering access to multiple buyers/markets for fresh produce.

Cold-chain is the sole option that overcomes limits of perishability, to sell fresh into more markets; promotes faster returns; larger number of transactions; enhances revenue; maximises price realisation with minimal need of added inputs; and demonstrably promotes produce quality and higher productivity.

For further inputs towards cold-chain development, a study is underway which applies an inverse approach. This study involves an assessment of consumption / demand of fruits and vegetables, as the basis to arrive at the infrastructure gap to effectually cater to such demand – the study is delinked from earlier approaches (by private and public researchers) which assessed infrastructure requirements on the basis of production (supply side) alone. This is a first such demand driven study and we invite all concurring stakeholders to contribute wholly towards these ongoing efforts.

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Strategy (The How)

- ❖ A strategy is the logical approach that will be employed to help achieve objectives. The general plan of action is described, but specific activities are not detailed in the strategy statement.
- ❖ A strategy, therefore, does not describe desired outcomes of a plan - those are already stated objectives. A strategy, however, delves into elements of both objectives and tactics.
- ❖ Strategy statements specify the key approach involved on how objectives can best be achieved.
- ❖ Directionally long term to deliver or bring to logical conclusion a target statement or mission over a defined horizon of time.

Tactics (The What)

- ❖ Tactics are specific actions taken to achieve desired outcomes, taking several key but abstract elements of a strategy, turning them into something concrete.
- ❖ Needs cascade effect with actionable steps right from the first act onwards.
- ❖ Driven by core strategy to address short term hic-cups and to course correct.