

<b>COMPANY NAME</b> <b>ECF FARMSYSTEMS</b>		
	<b>SECTOR</b> <b>Food</b>	

ECF Farm Systems plans and operates aquaponic farms. Aquaponics is the combination of hydroponics (plant cultivation with piped water and minimal or no substrate) and aquaculture (fish farming). ECF operates its pilot urban farm in Berlin, Germany. ECF also plans and builds aquaponic farms for 3<sup>rd</sup> parties, e.g. at the Anderlecht Abattoir in Brussels.

## CHALLENGES

Supplying food to urban areas has a major CO<sub>2</sub> footprint; indeed, none of it is grown locally and so transporting food to urban centres generates “food miles”. This is even truer of products such as fish. Moreover, traditional farming makes use of fertilisers, pesticides and fossil-powered agricultural equipment, each of which have an impact on the environment and human health. ECF’s answer is to **leverage the efficiencies of the symbiosis between plant and fish farming, when co-located.**

## INNOVATIONS

- Aquaculture and hydroponics on the same site result in industrial symbiosis between both cultures;
- The outputs of one culture are used as inputs by the other, so-called ‘co-product recovery’, thus creating operational (and environmental) efficiencies. This is particularly true of water/waste-water and air/gas media.

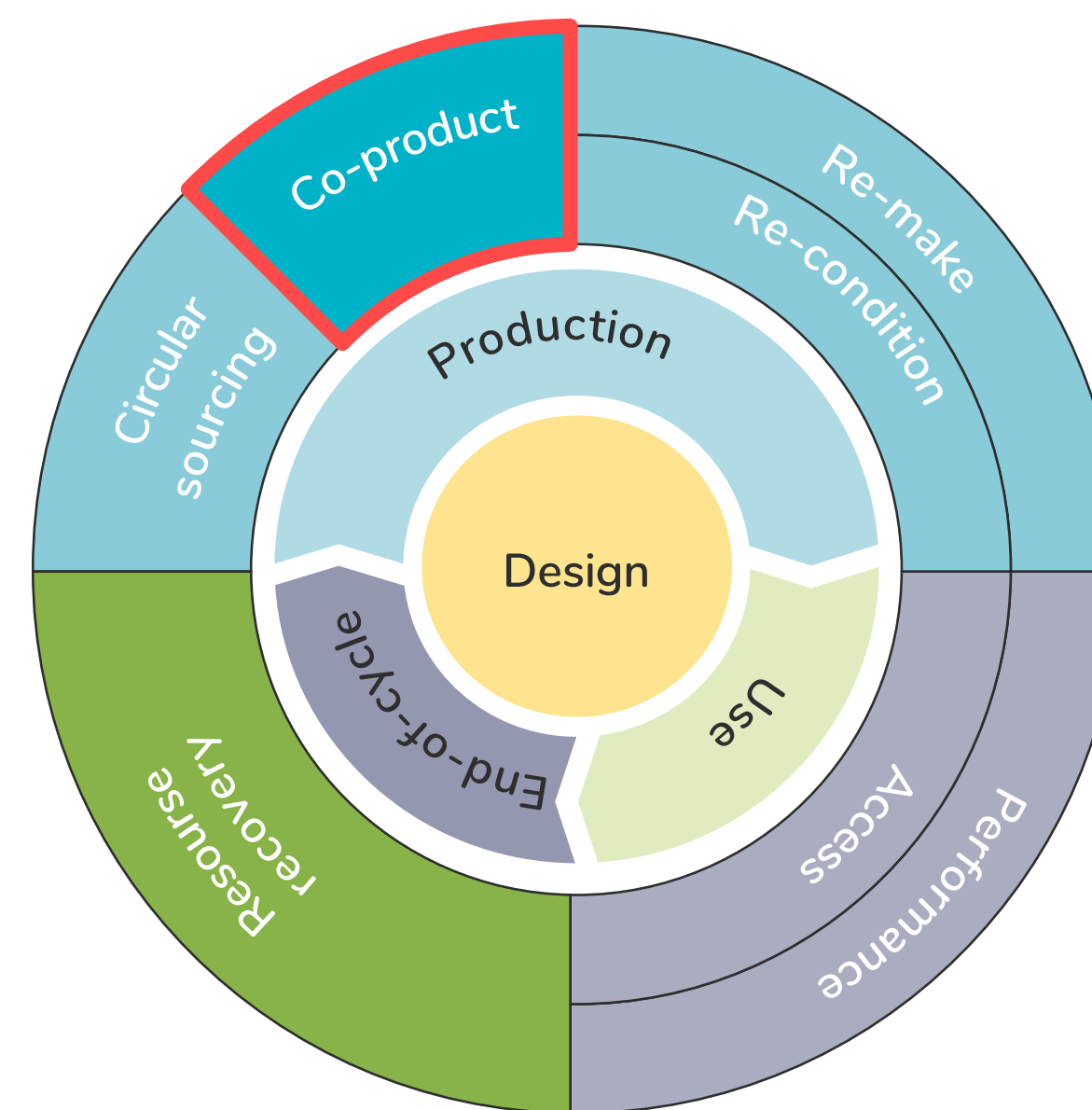
A further innovation is in the Business Model, insofar as ECF has gone beyond being an operator of its own farm, to being a planner and builder of aquaponic farms for 3<sup>rd</sup> parties; it even co-manages those farms. It is a B-O-O/B-O-T (Build-Operate-Own/Build-Operate-Transfer) model applied to urban farming.

## KEY ENABLERS

Know-How is an enabler in obtaining the symbiotic efficiencies of the aquaponic system. This also covers the adequate dimensioning of the aquaculture in relation to plant cultivation.

The socio-demographic context (growing population, growing urbanisation), alongside the environmental one such as competition for arable land, biodiversity loss, over-fishing, agro-chemicals in food production and others are the contextual drivers for aquaponics as a successful CEBM.

## CIRCULAR ECONOMY BUSINESS MODELS



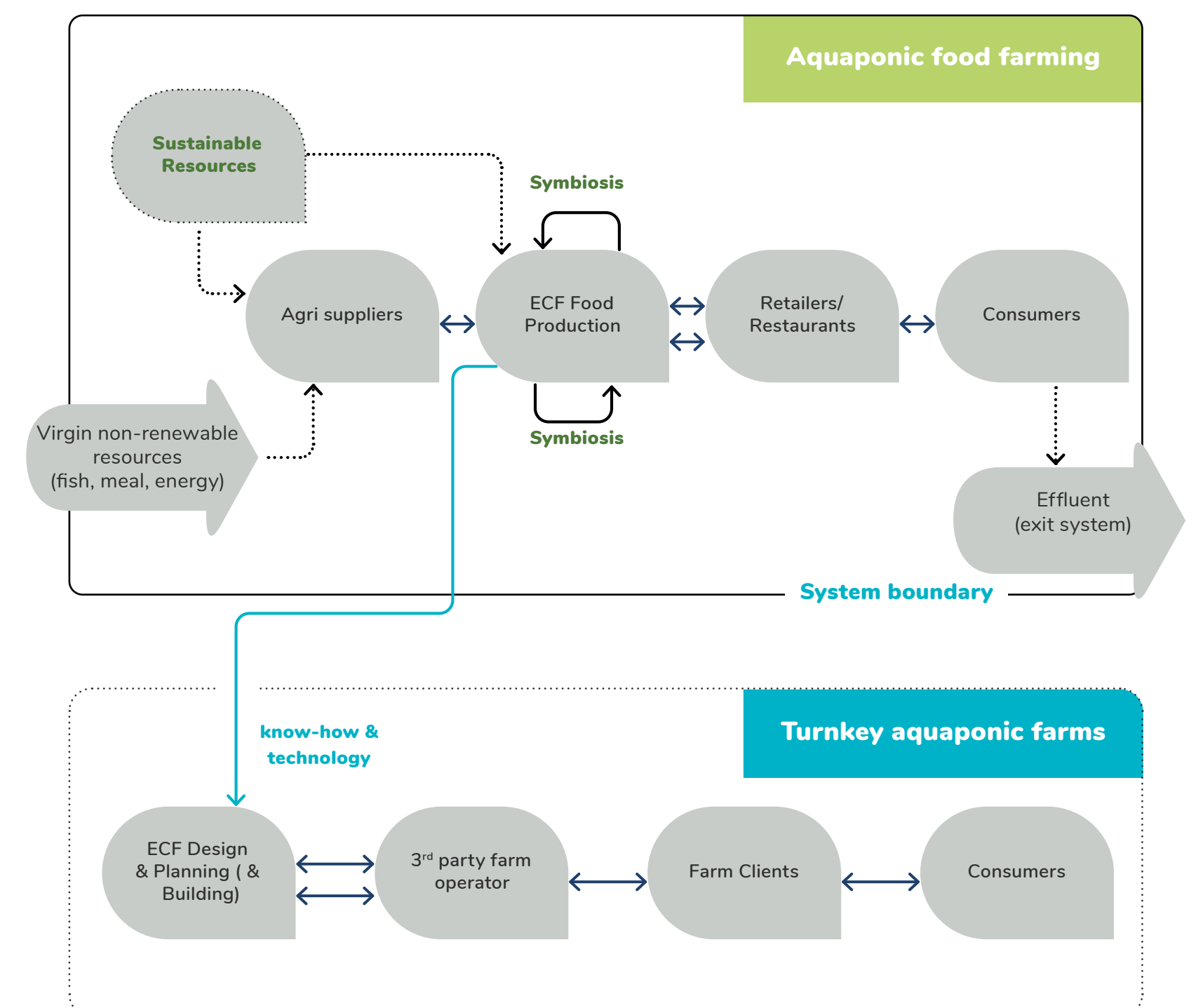
## KEY OUTCOMES

Aquaponics is replicable and transferable, in particular, to other geographies, which may incidentally have greater need for it than current operations in western Europe.

In fact, nations with limited fresh water, agricultural or marine resource combined with dense, urbanised population, ought to be particularly interested in this business model and the technology which drives it. In such a context, demand for aquaponic products would be high and market prices would yield greater profitability, underlining the success of such a CEBM.

Aquaponics in Europe remains challenged by ‘linear’ public policy (subsidies for conventional agriculture and marine fishing fleets, as well as the ban on insect fish feed).

## MATERIAL FLOWS



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