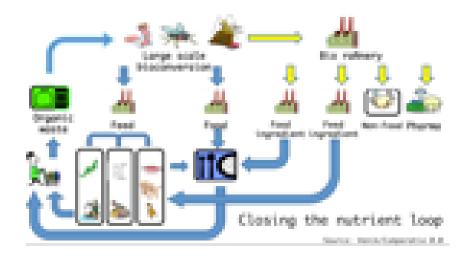


Insect eco-system to scale

Marian Peters

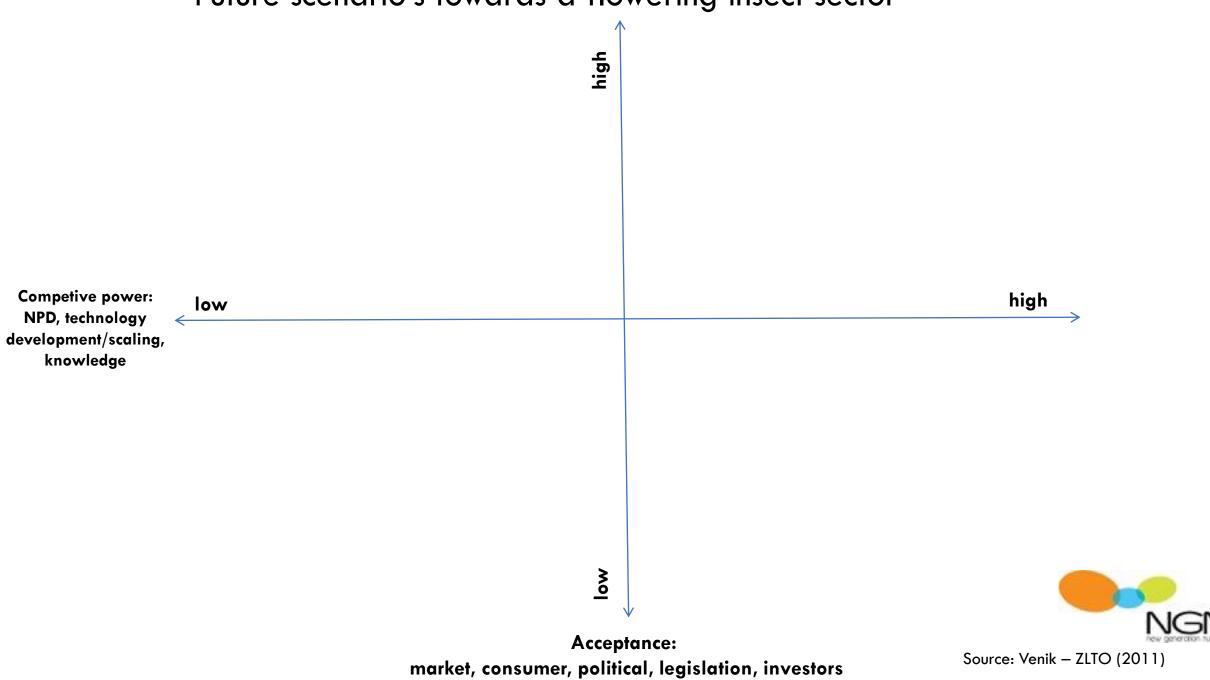




Challanges = research



Future scenario's towards a flowering insect sector



2011: 2 routes to sustainable growth

high

Tempting food innovators Insects are seen by innovators as sustainable and trendy food, while technology for up scaling is developed. The mass market will not be penetrated due to high cost prices. To gain acceptance, customer intimacy is important.

Competitive power: NPD, technology, marketing, branding knowledge

low <

Defending existing interests No chances for growth. Existing parties on the market defend their position; resulting in intensive internal price competition & gradual scaling. A flowering insect industry Plenty of market opportunities in different market segments. Collaboration in partnerships are s important to maintain control on and extend added value & to manage risks.

high

Flying under the radar Production facilities technically proved to scale to high volumes and cost price reduction, still insects evoke the resistance of the consumer. Initially feed and pharma are offering the largest market opportunities. Food market will follow at a later stage with unrecognizable applications.

Acceptance: market, consumer, polical, legislation, investors, funding

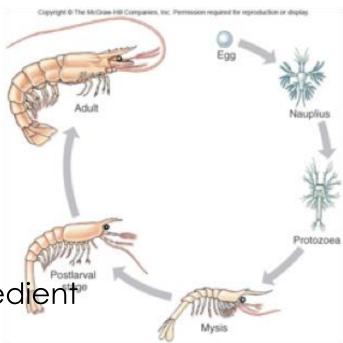
N

Source: Venik – ZLTO (2011)

Market for mini-livestock

- Current market
 - Niche markets: pet-food
 - Products: whole insect (alive or dried)
 - High turn-over per kilo
 - Small operations

- Future market
 - Bulk markets (feed, food)
 - Products: composed products, mini livestock as ingredient
 - Low turn-over per kilo
 - Industrial production



System Innovations: things are on the move

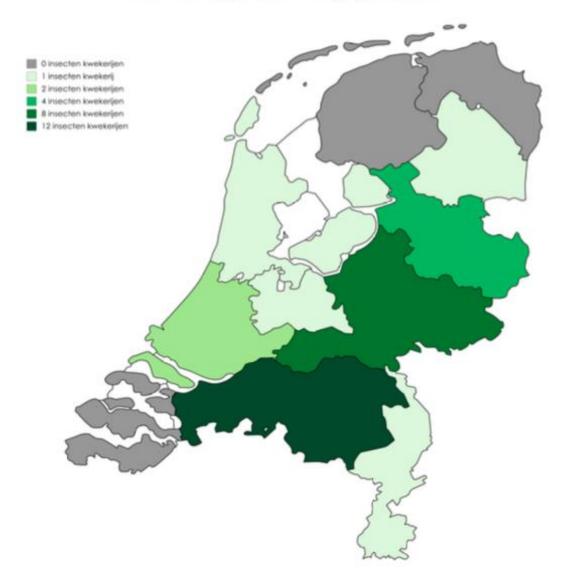
2009 Insect research typically at Plant sciences groups Insects considered as pest or contaminant insect production for special pet food

2019 insects as production animalinsects as ingredient for feed & foodIndustrial insect production takes of



GEOGRAFISCHE SPREIDING INSECTENKWEKERIJEN OVER NEDERLAND

Totaal: 31 kwekerijen in Nederland per januari 2019.



Insect species farmed in NL	nr. farms
locust	9
cricket	5
Mealworm	13
Buffaloworm	3
Morioworm	2
Black Soldier Fly	4
Blow fly	2
House fly	2
Other	4
Total farms	31

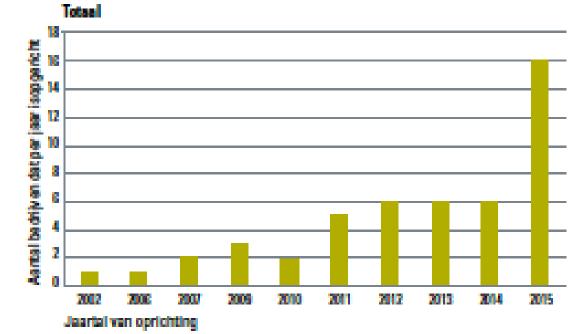


Succesfactoren: kennis, kapitaal en ketenaanpak

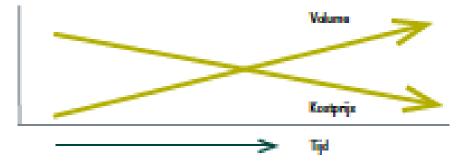
Insectenkweek: kleine sector, grote kansen



Figuur 2: De groei van het aantal bedrijven dat BSF kweekt wereidwijd (bron: NGN)



Figuur 8: met de tijd zal het geproduceerd volume van insecteneiwit toenemen en de kostprijs per kliogram dalen



Bron: ABNAmro 2016

Good news

rtlnieuws

13 juni 2017 14:32 Aangepast: 14 juni 2017 08:15



Het Nederlandse bedrijf Protix krijgt maar liefst 45 miljoen euro om de productie van veevoer gemaakt van insecten uit te breiden.



By Jane Byrne 29-Nov-2018 - Last updated on 29-Nov-2018 at 13:26 GMT

InnovaFeed, an Evry, France-based biotech company producing Black Soldier Fly (BSF) derived protein for the feed industry, has raised another €40m in funding from international investors, bringing to over €55m the total amount of funds it has generated in 2018.

Britten bouwen grote larvenfabriek in België

03 december 2018 11:32



Johan Jacobs van Millibeter en zijn zwarte wapenvliegen. ©Wim Kempenaers

Het Britse insectenbedrijf AgriProtein neemt zijn Vlaamse tegenhanger Millibeter over. Het investeert meteen 15 miljoen euro in een Belgische fabriek om larven van zwarte soldaatvliegen te kweken als voedsel voor vissen.



News & Analysis on the Global Animal Feed Industry

21-Feb-2019

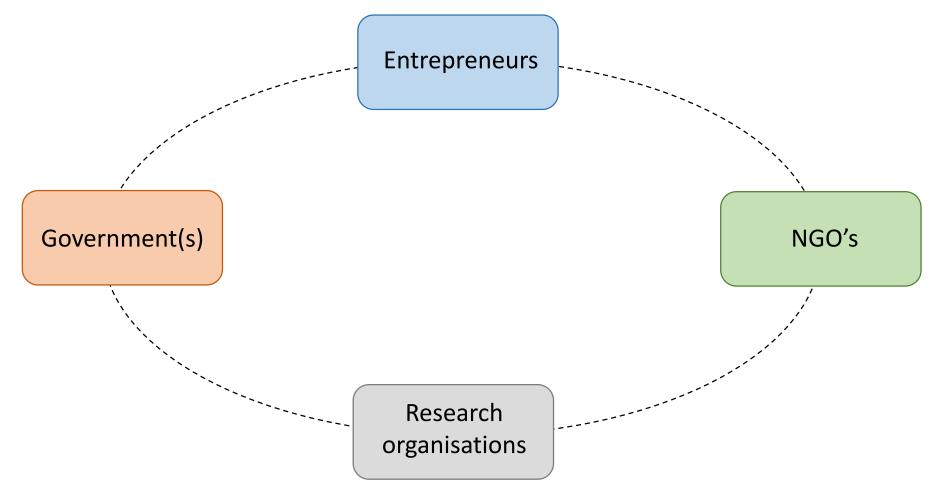
TODAY'S HEADLINES



French insect protein producer, Ÿnsect, raises \$125m in an investment round

Led by Astanor Ventures, and backed by established international funds including Bpifrance, Talis Capital, Idinvest Partners, Finasucre and Compagnie du Bois Sauvage, Ÿnsect said this \$125m (€110m) investment is the largest-ever ag-tech funding deal outside of the US... <u>Read</u>

Scaling the insect sector



Stakeholders in scaling

What is scaled is not so much a technical solution

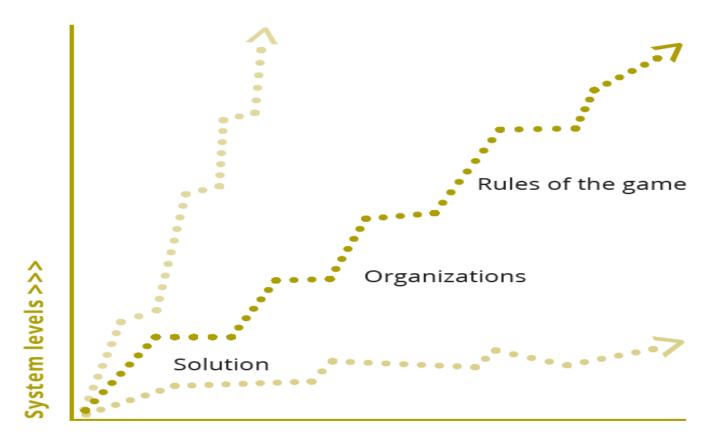
but rather a **set of arrangements** that enables the adoption of an improved solution/practice.

→ Importance of scaling/delivery mechanisms

What is scaled: common elements

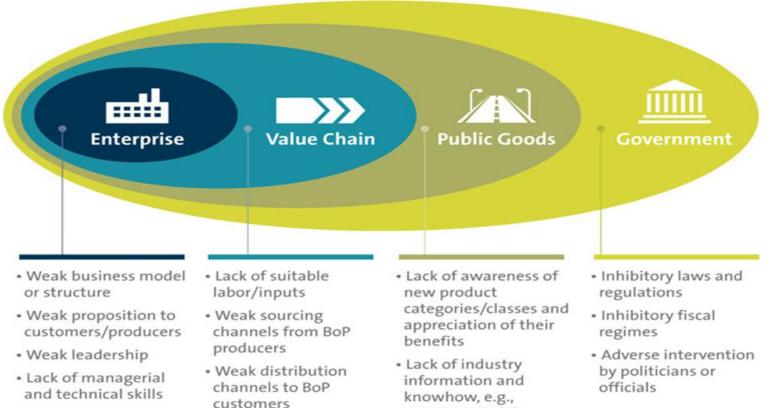
- Awareness and demand creation
- Availability of technical solution
- Financial arrangements
- Value chain development
- Back-up by professional knowledge
- Embedding in government policies

Horizontal and vertical



Number of people reached >>>

Scaling Barriers



- Lack of capital
- Weak linkage between BoP producers and end demand
- Lack of financing for customers, distributors and producers
- Lack of support service providers

- customer insight, business models
- Absence or ineffectiveness of standards e.g. for quality
- Lack of infrastructure

Horizontal & vertical scaling

	HORIZONTAL	VERTICAL
Primary orientation	Increasing numbers, replication, business growth	Improving the enabling environment, rules of the game and institutions
Related areas of action	 Demand & awareness Quality of the solution Attractive business models Value chain development 	 Value chain governance Sector platforms Public policies & regulations Tertiary sector functions

Levels in Scaling Processes

MACRO: RULES OF THE GAME AND INSTITUTIONS

- Policies, norms, standards, regulation
- Development of market/business environment
- Financing landscape and mechanisms

Actors: Government, (I)NGOs, (mullti-)national companies

MESO: ORGANISATION AND DELIVERY MECHANISMS

- Coordination between relevant actors
- Delivery systems, quality assurance
- Access to knowledge & education

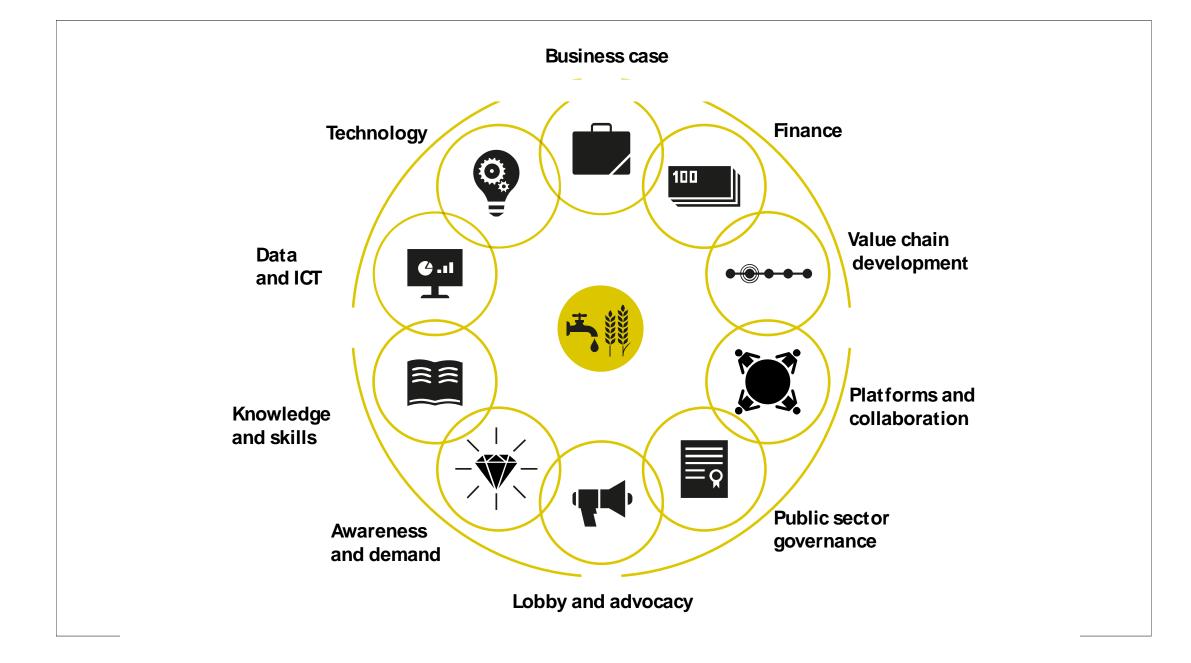
Actors: Local governments, service providers/SMEs, NGOs

MICRO: SOLUTION AND BASIC BUSINESS CASE

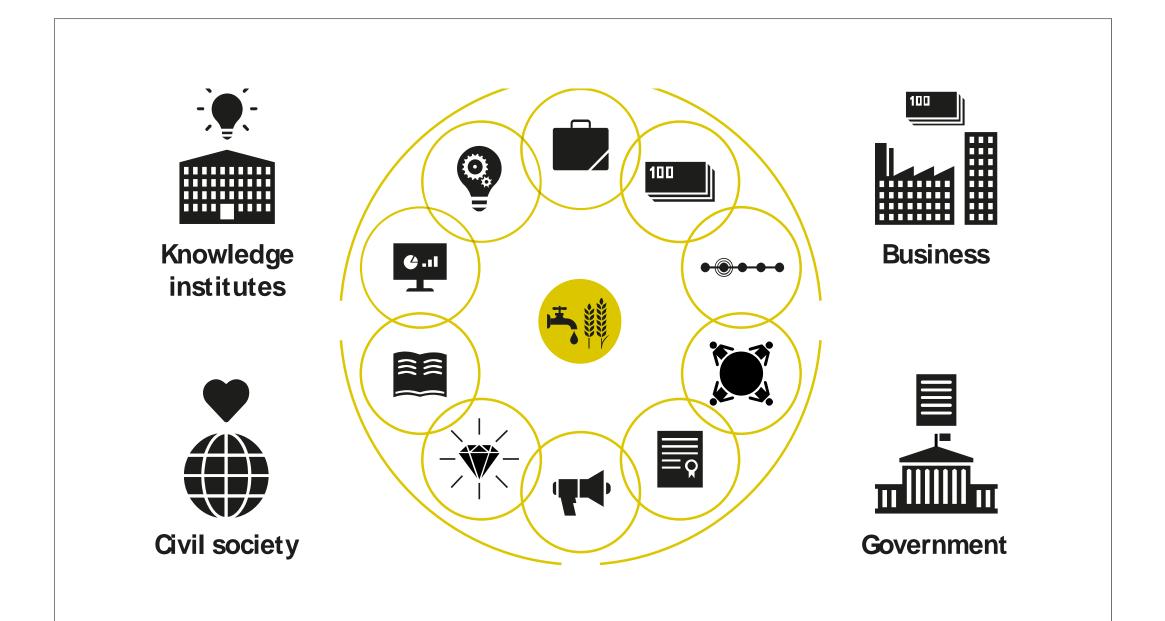
- Product/practice specifications
- Technology development
- Business case, price and competitive power

Actors: SMEs, technology developers

What to scale?



SCALING INGREDIENT	WHAT IT PROVIDES TO SUPPORT SCALING	SCALING INGREDIENT	WHAT IT PROVIDES TO SUPPORT SCALING
Technology	An effective and efficient solution for the issue at stake	Platforms & Collaboration	Strategic collaboration between key stakeholders
Business case	An attractive financial/economic proposition for users and others	Public sector governance	Enabling policies, regulations and mechanisms
Awareness and demand	A wish & readiness for users to apply the solution/practice	Lobby and advocacy	A change coalition that pursues scaling and influences others
Finance	Effective financing options for users and providers or buyers	Knowledge and skills	The required knowledge, professional capacity, recognition
Value chain development	Effective supply and provision of related services	Data and ICT	Evidence/facts that underpin and communicate the scaling ambition



Two types of scaling stages

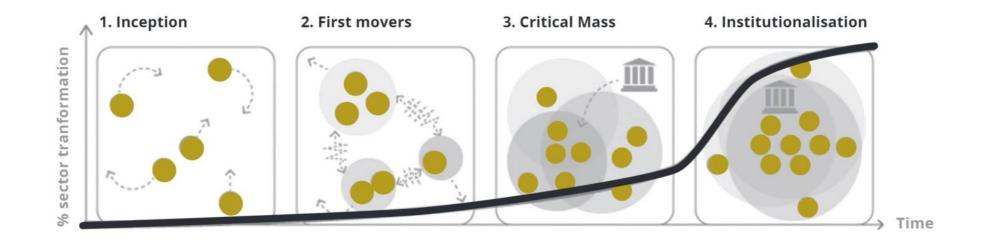
- Individual Businesses / Propositions
- Sector Transformation

Stages of scaling a business proposition



(after Koh et al. 2012)

Stages of sector transformation



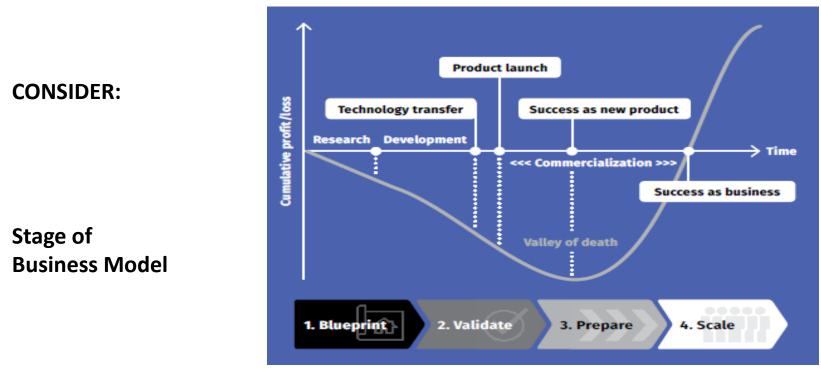
(© NewForesight Consultancy B.V.)

Scaling and finance

Finance – graduation

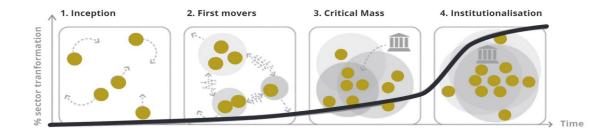
Social return on Inve	Priority		
Just Impact	Impact first/ Impact & Profit	Profit first/ Just profit	of Funder
Public Sector/	PPP/	Traditional	Receiver
Charity	Social Enterprise	Business	of Funding
Philantropist,	Government,	Traditional Bank	Possible
Government, NGO	Impact Investor,	and Investor	Funders

What is funded by whom and why?



AND

Stage of Sector Transformation



Questions?

Thank you for your attention!

Marian Peters marianpeters@ngn.co.nl

