



SWEDISH SURPLUS
ENERGY COLLABORATION

Innovative food production of fish
and vegetables
Healthy environments for people

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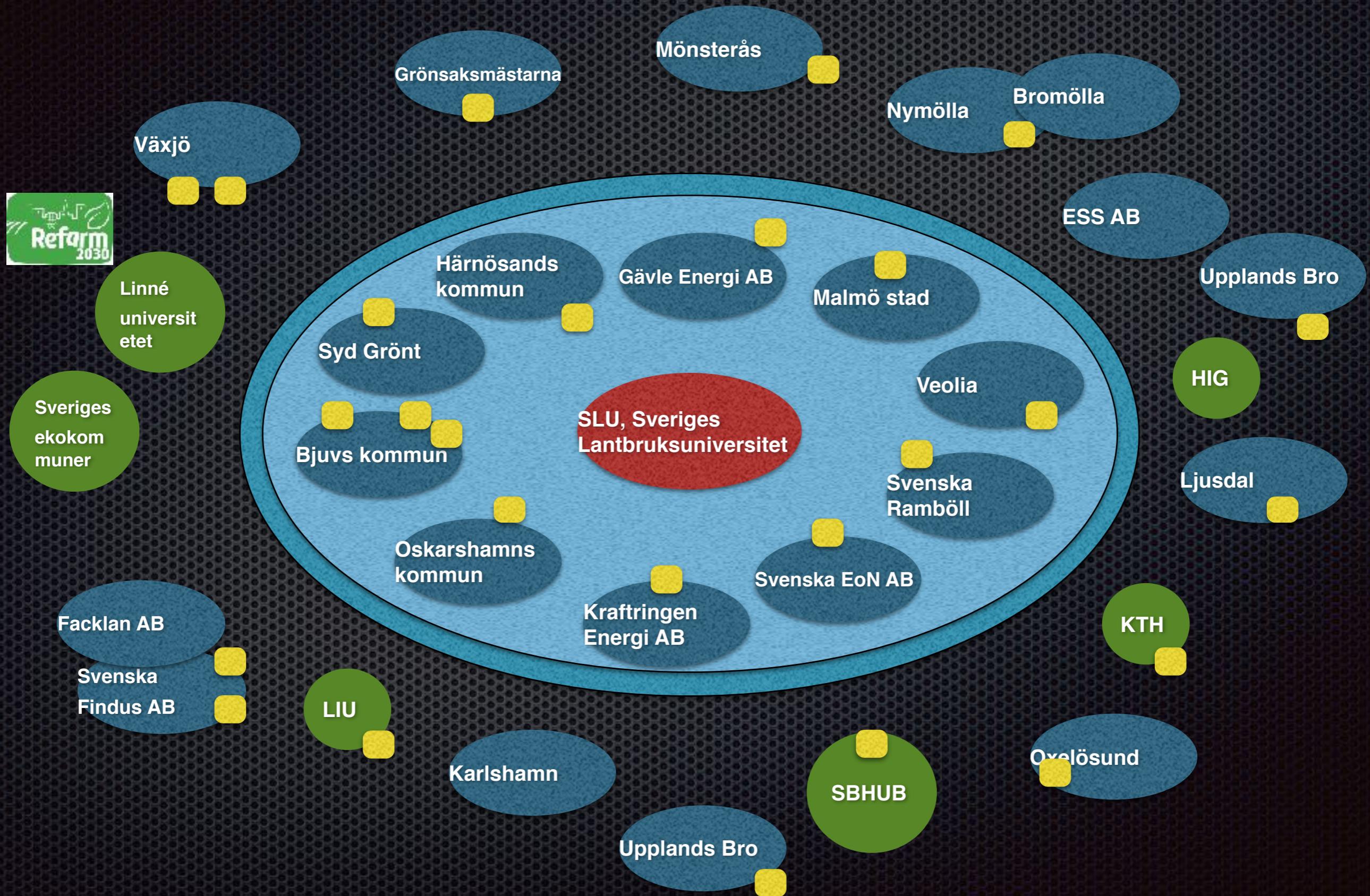
Two main orientations within SSEC

Urban Food



Urban Health





Strategic objectives

TWO LONG TERM STRATEGIC OBJECTIVES DESCRIBED FOR THE PROGRAM

Urban Food, *A viable industry development*

SSEC enables a new Swedish, intense, circular and symbiotic primary production of fish and vegetables in urban and industrial environments.

Urban Health, *Healthy human environments created*

SSEC develops new healthy environments for people in urban areas.

Overall goal for SSEC

Construction commenced
of at least
three full-scale innovative facilities
during
2016 - 2018

Results and effects of the SSEC

after 3 years from 2013 to 2015

redovisade den 17-18 september 2015

- A solution for the recovery of low grade heat at ESS AB in Lund
- Vega Fish Bjuv AB, *production of giant shrimps*
- WA3RM, financiers, owners of new Greenhouse and fish production units
- Royal Pride Sweden AB, Bjuv, tomato producer
- Karlshamn MDHAP, a planning tool for municipalities to enable the establishment of fish and vegetable production in the new industrial areas
- Pekka's Naturodlingar AB, *closed aquaponic facilities in Härnösand*.
- Ongoing planning of 50 hectares of tomato greenhouses in Bjuv, Gävle and Ljusdal.
- Over 10 sub-programs around the country of Sweden, *Härnösand, Ljusdal, Gävle, Oxelösund, Oskarshamn, Växjö, Mönsterås, Karlshamn, Bromölla, Bjuv, Lund, Malmö, etc.*
- A large number of projects to support the development.
 - *Energy and resource-effective greenhouse technology competitive in an international market.*
 - *Recirculation based production and processing of vegetables and fish*

Results and effects of the SSEC 2015 - 2016

The initial public offering of the aquaponic company Peckas Naturodlingar från Härnösand is made during September.

Two full-scale innovative facilities in Bjuv and Gävle respectively are being planned.

Insight # 1

There is a large and growing market for fish and vegetables both in Sweden and abroad

- Reduced energy costs during the regular growing season and the opportunity to extend the growing season into the winter months are contributing to increased competitiveness of production with residual heat.
- The competitiveness of new cultures can be further strengthened by focusing on niche market segments, such as organic farming and the cultivation of special varieties. This approach, however, has no connection to the residual heat is used.
- Price premium for the "Swedish" can be strengthened through joint marketing in the industry that highlights Swedish added value.

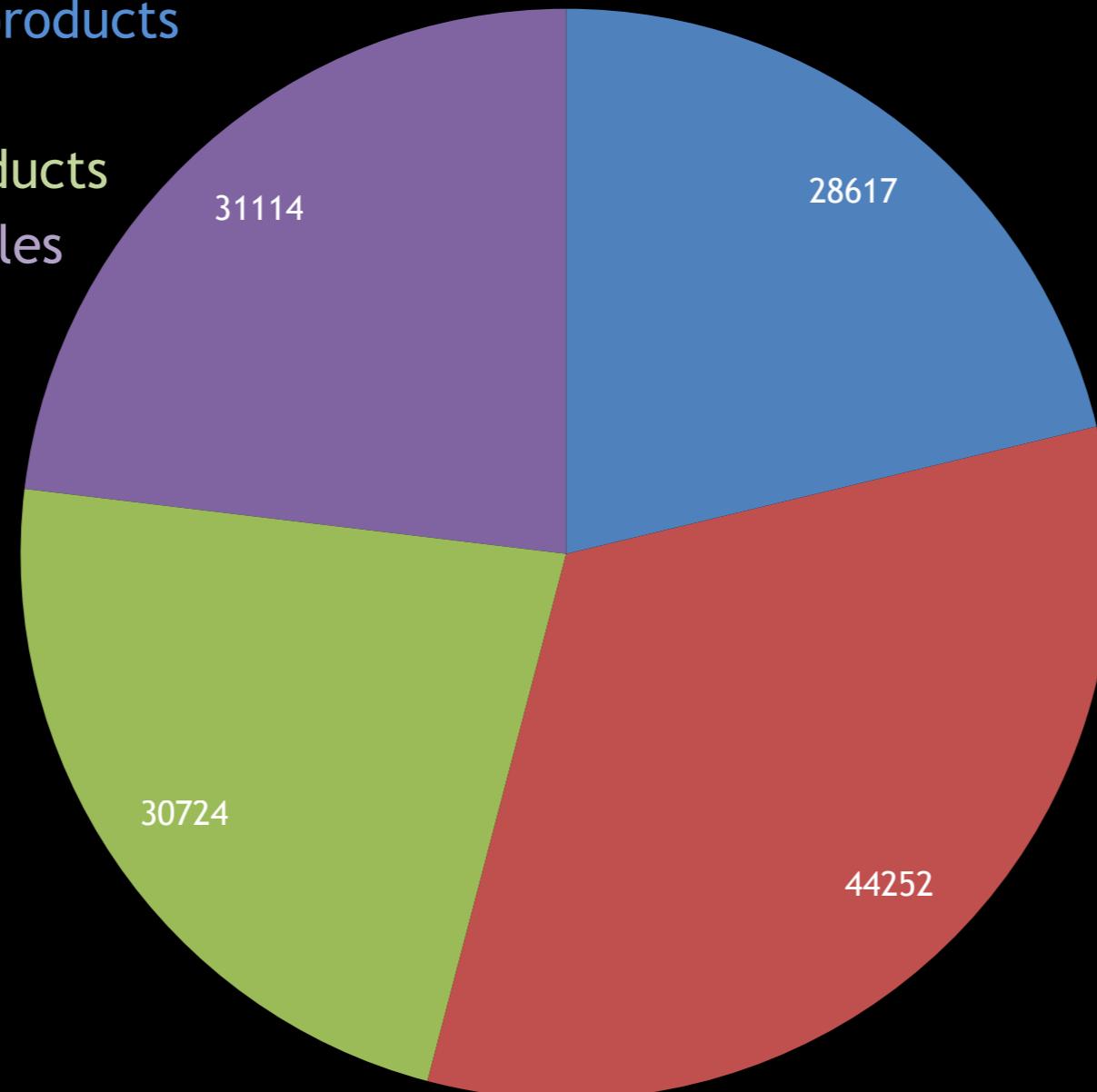


Sales of food in Sweden

In miljon SEK (2010)



- Bread and cereal products
- Meat and fish
- Milk and dairy products
- Fruits and Vegetables

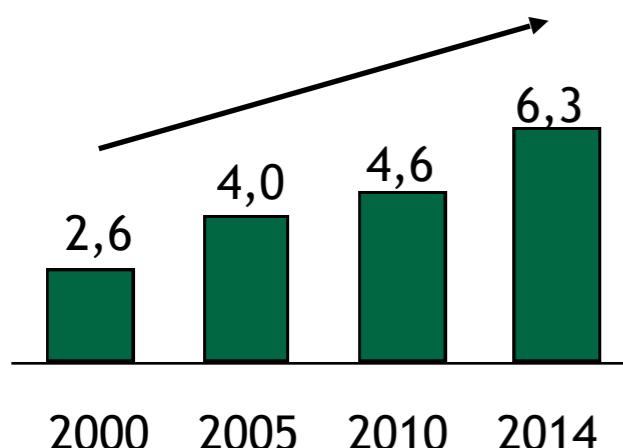


Håkan Sandin

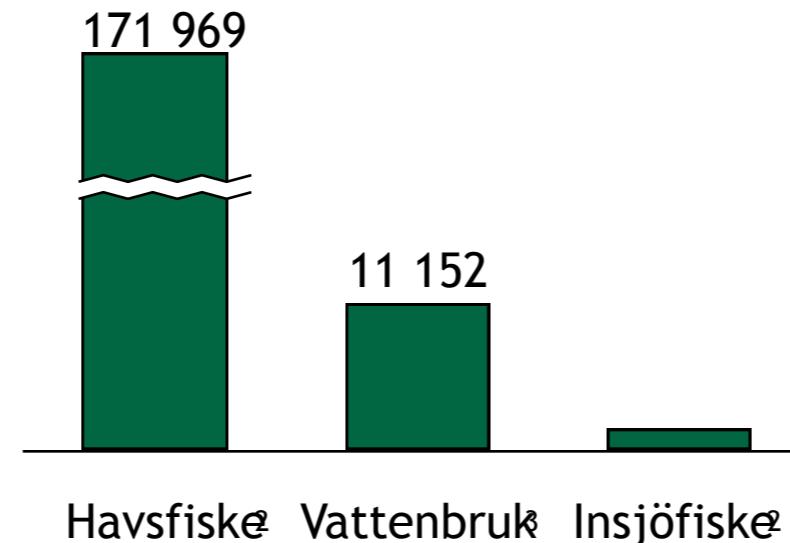


Den svenska fisk och skaldjursmarknaden växer kraftigt men gös och abborre står för en liten andel av fiskkonsumtionen

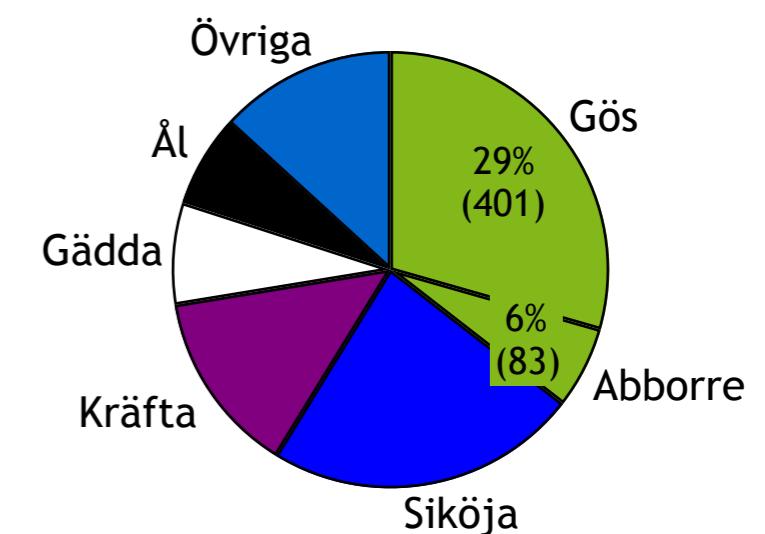
Svenskar konsumerar mer fisk och skaldjur(MDR KR)¹



Svenskt vattenbruk och insjöfiske är idag mycket litet jämfört med havsfisket
(ton)



Fångsterna av Gös och Abborre är förhållandevis små och utgör ~35% av fångsten från Sveriges insjöar
(% av fångst, ton)²



- Svenskar äter ca 16 kg fisk per år jämfört med 85 kg kött.
- Lax och torsk står för merparten av svenskars fiskkonsumtion.
- De viktigaste egenskaperna när konsumenter köper fisk är kvalitet och pris.

- Merparten av den landade fisken i Sverige säljs via Göteborgs fiskauktion.
- Vattenbruket i havs- och sjöbaserade kassar består främst av Regnbåge (9 436 ton) och Röding (1 644 ton).

¹SCB: Försäljning (inkl. moms) av livsmedel och drycker inom handeln (enligt COICOP), löpande priser, mnkr efter varugrupp och år

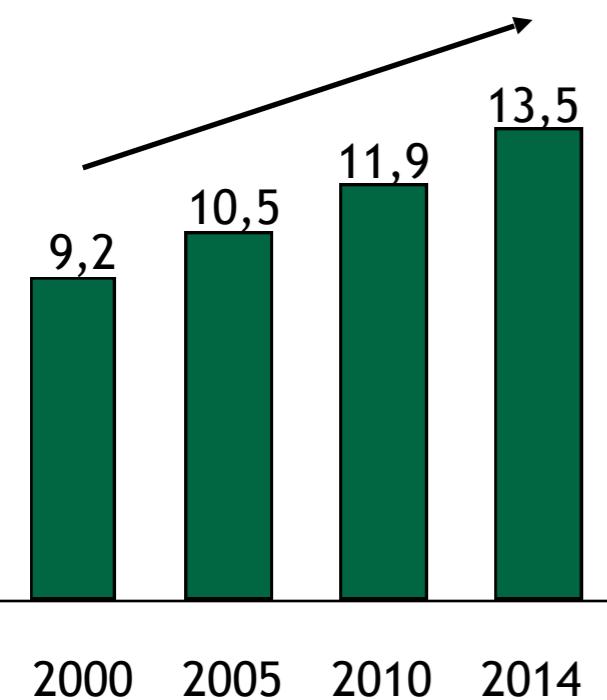
²SCB: Det yrkesmässiga fisket i Sverige

³Jordbruksverket: Svenskt Vattenbruksproduktion

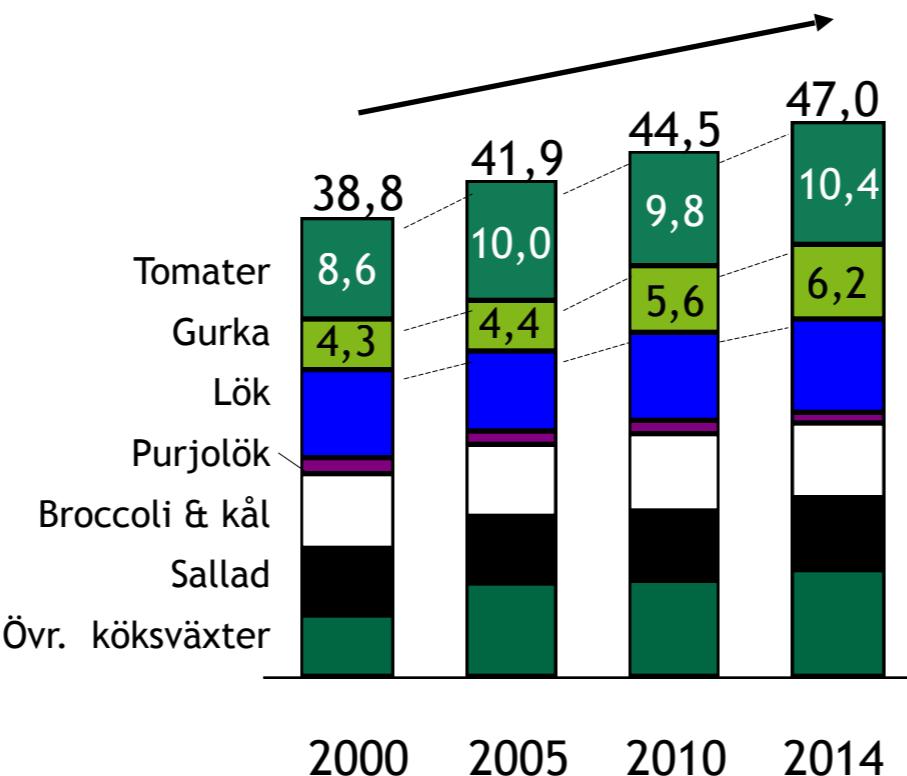


Den svenska konsumtionen av grönsaker, inklusive konsumtionen av tomat och gurka, växer

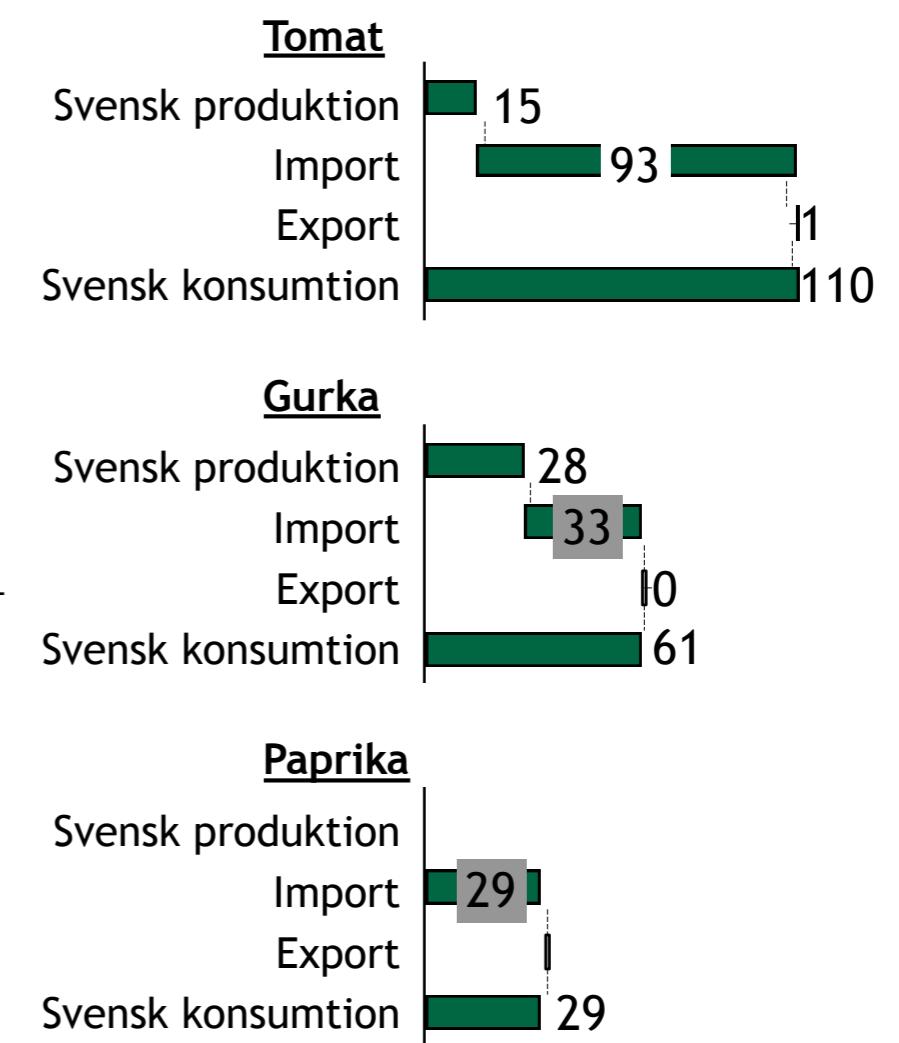
Svenskar konsumerar mer grönsaker och potatis (MDR KR)¹



Konsumtionen per capita av tomater och gurka ökar² (kg per capita)



Produktion, import, export och konsumtion för analyserade grönsaker (-000 ton)²



¹SCB: Försäljning (inkl. moms) av livsmedel och drycker inom handeln (enligt COICOP), löpande priser, mdr kr efter varugrupp och år

²Jordbruksverket - Marknadsöversikt 2014 Färsk frukt och grönsaker

Insight # 2

Circular horticultural and land-based aquatic industry
is very beneficial for the Swedish society

- Creates employment for many people in new businesses
- Produces healthy and safe food
- Recycles residual flows in society
- Streamlines existing industry
- Uses oversized infrastructure
- Creates great environmental values
- Develops new land-based food production systems in industrial and peri-urban environments with an international impact
- Enables export

Insight # 3

We can create a lot of employment in small areas and increase productivity significantly, in the agricultural sector, by thinking more fish and vegetables.

Primary production

potatoes, fruit, vegetables, nursery and ornamental plants. 1 job in the primary production relates to 10 job in the over all value chain.

50 000 ha in Sweden

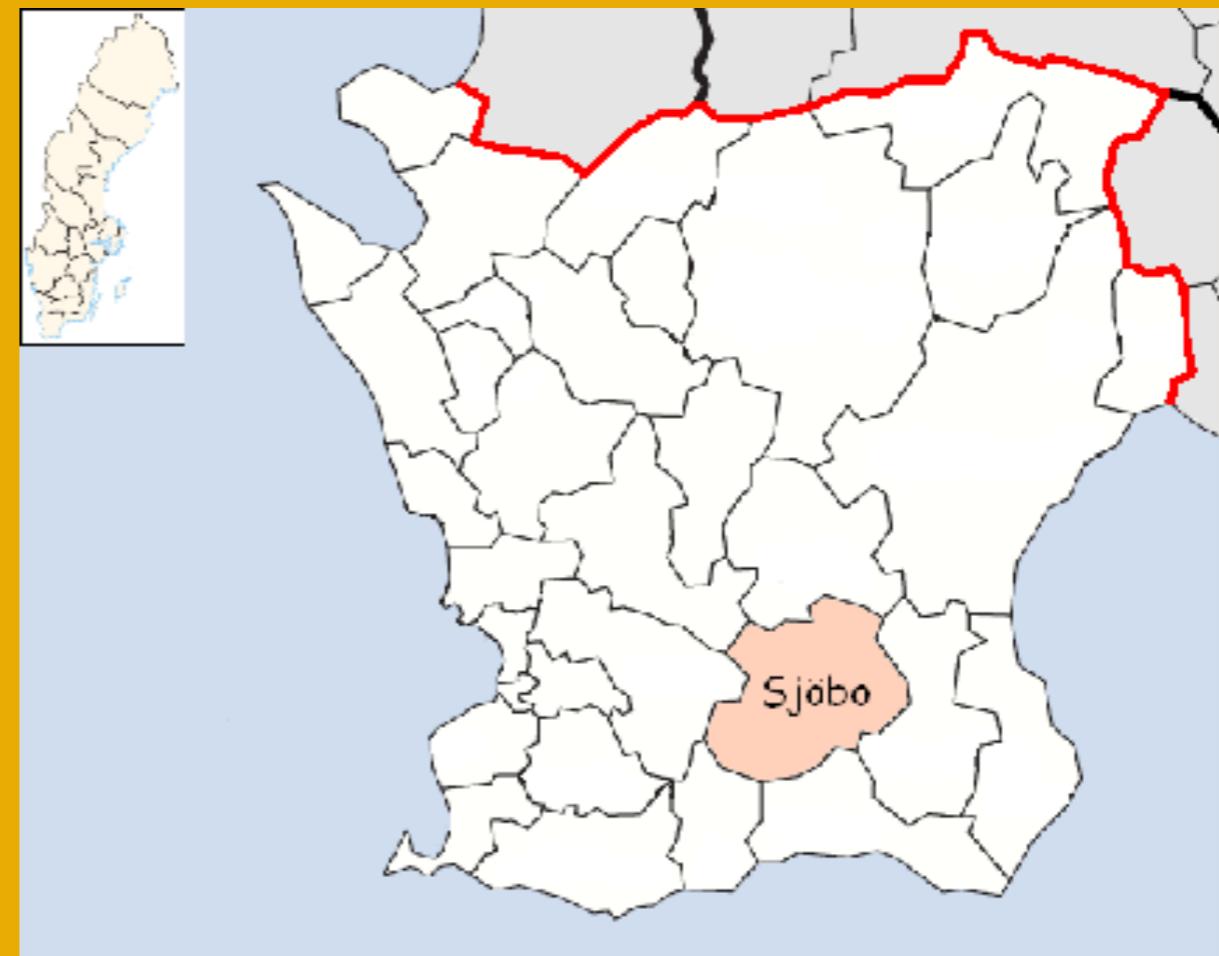
8000 full-time jobs in Sweden

70-80 percent in Scania.

7 billion value in Sweden

5 billion value in Skåne

140 000 per hectare.





50 hektar tomatodling och 5000 ton fisk, akvaponik,
skapar 500 nya jobb

Insight # 4

Future food entrepreneurs have not easily access to land or capital

- is often a person who has no background in the food industry
- do not have access to knowledge about the possibilities of becoming a food entrepreneur

Insight # 5

Residual Flows of various kinds is a resource for innovative development of urban food production and urban healthy environments

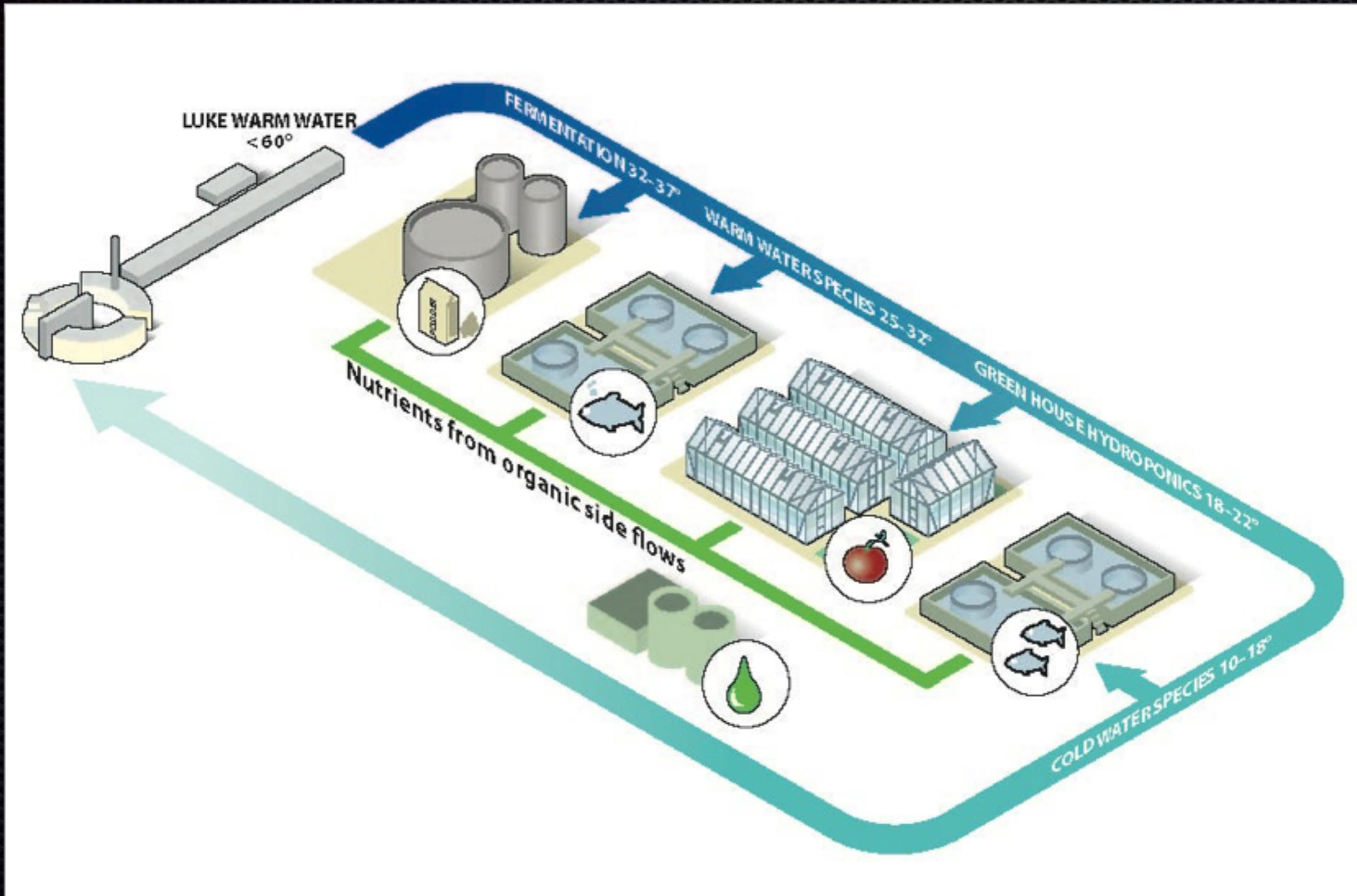
With the help of residual flows from the town of for example low-grade heat, quality-separated food waste or carbon dioxide, we can build a whole new town near circular food production of primary products such as fish and vegetables.

By also utilizing the infrastructure available in the city, we create a better economy for both the food industry, the city and the infrastructure owners such as district heating systems.

Through the use of district heating infrastructure in our cities, we can create innovative healthy environments for people.

SURPLUS HEAT FOR HEALTH

We use surplus heat and other residual flows from our cities and industry to create a healthier environment for both people and the growth of fish and vegetables



Insight # 6

Logistically and industrially smart located production of fish and vegetables in Sweden

The new large, insight / innovation this year, 2016 is the understanding that we can grow together with industrial property and logistics companies.

Therefore, we have made contact with Catena and together with them try to develop a business idea.

We also suggest that they should be one of our partners, in order for us to grow together with over Sweden.

