

SYSTEMIC DESIGN

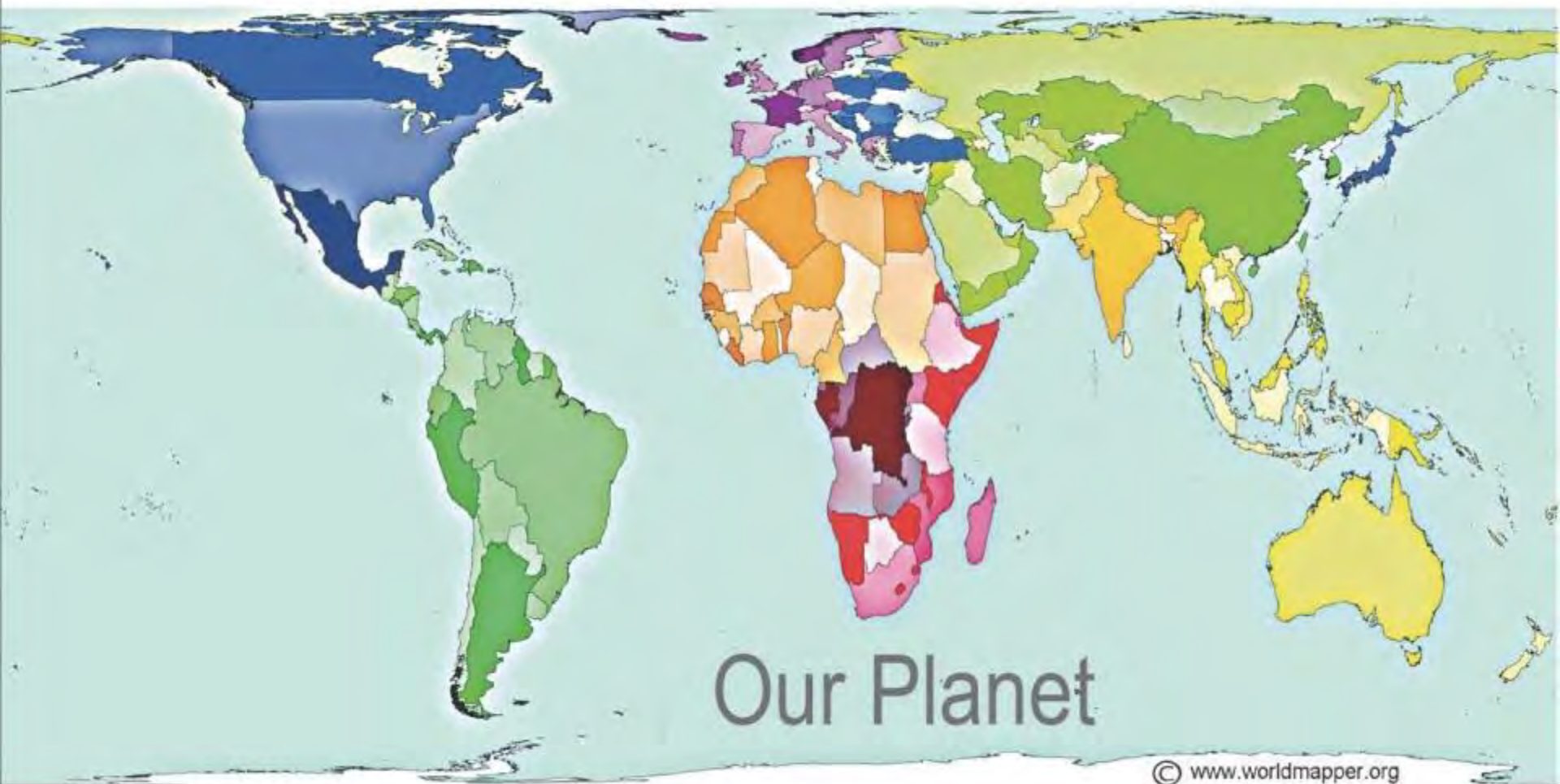
the amount of relations
generates
a new economic-productive model

research group on Systemic Design, Politecnico di Torino

Luigi Bistagnino



DESIGN



Our Planet

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DESIGN

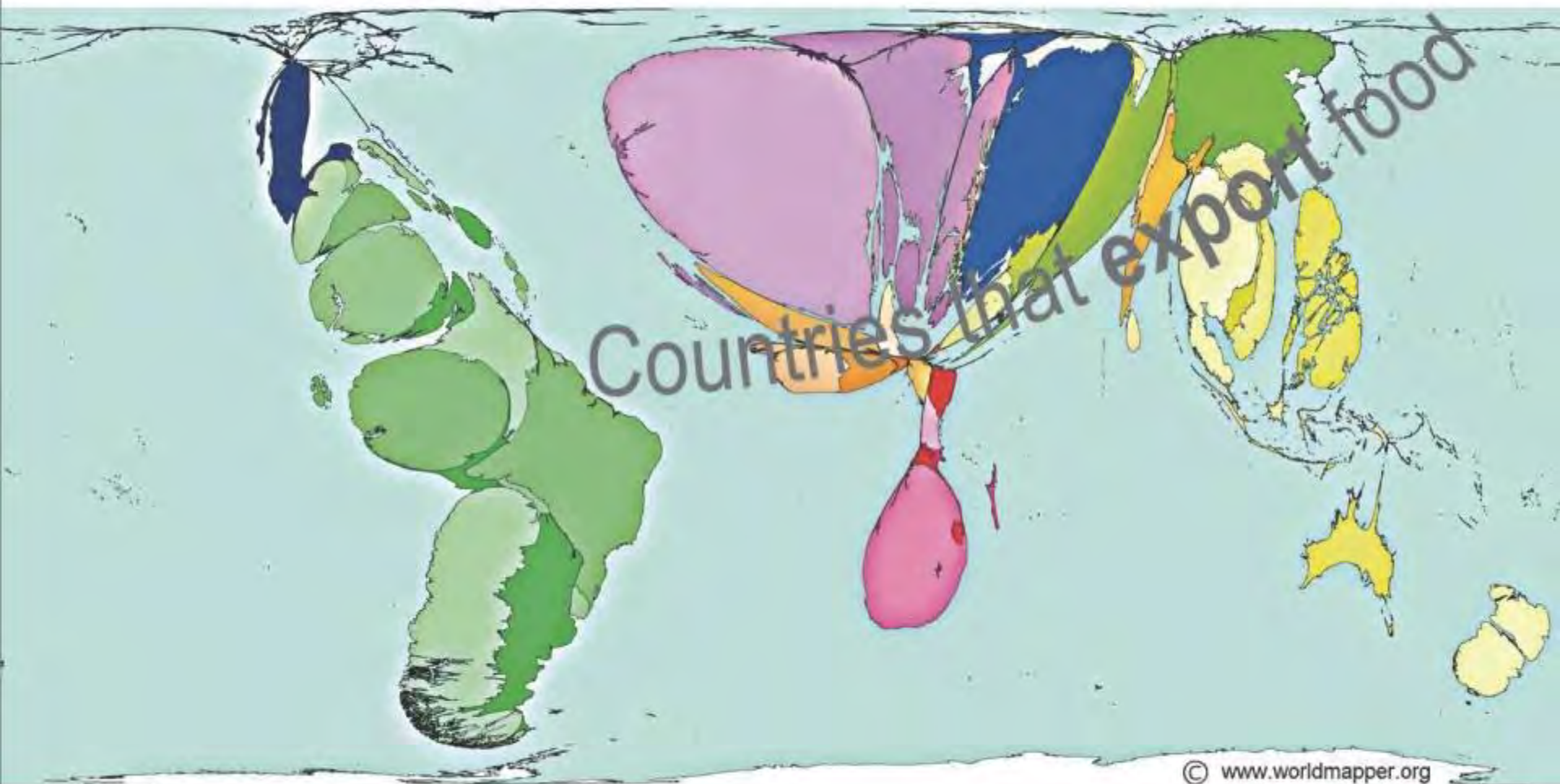


Countries that import food

© www.worldmapper.org



DESIGN



Countries that export food

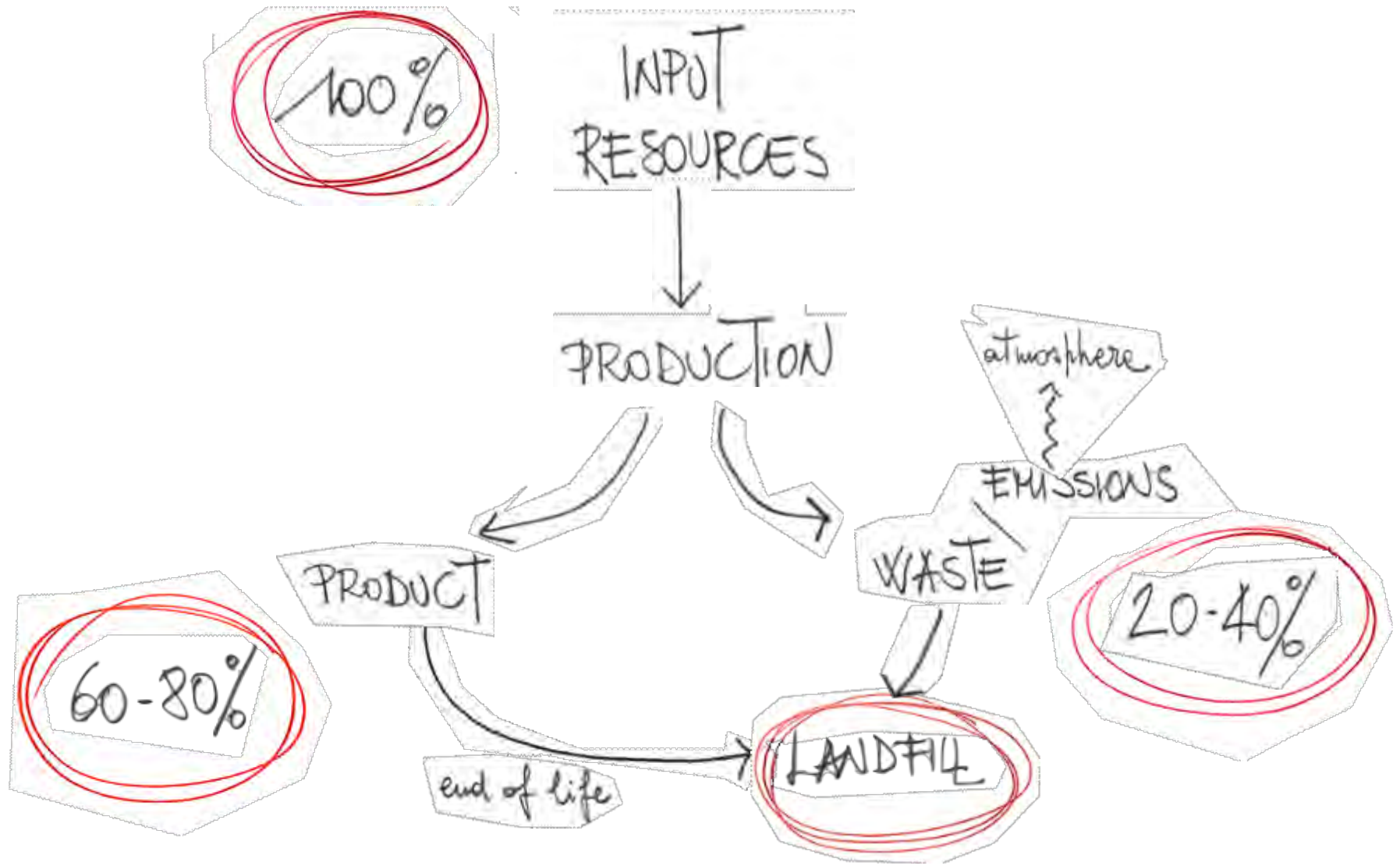
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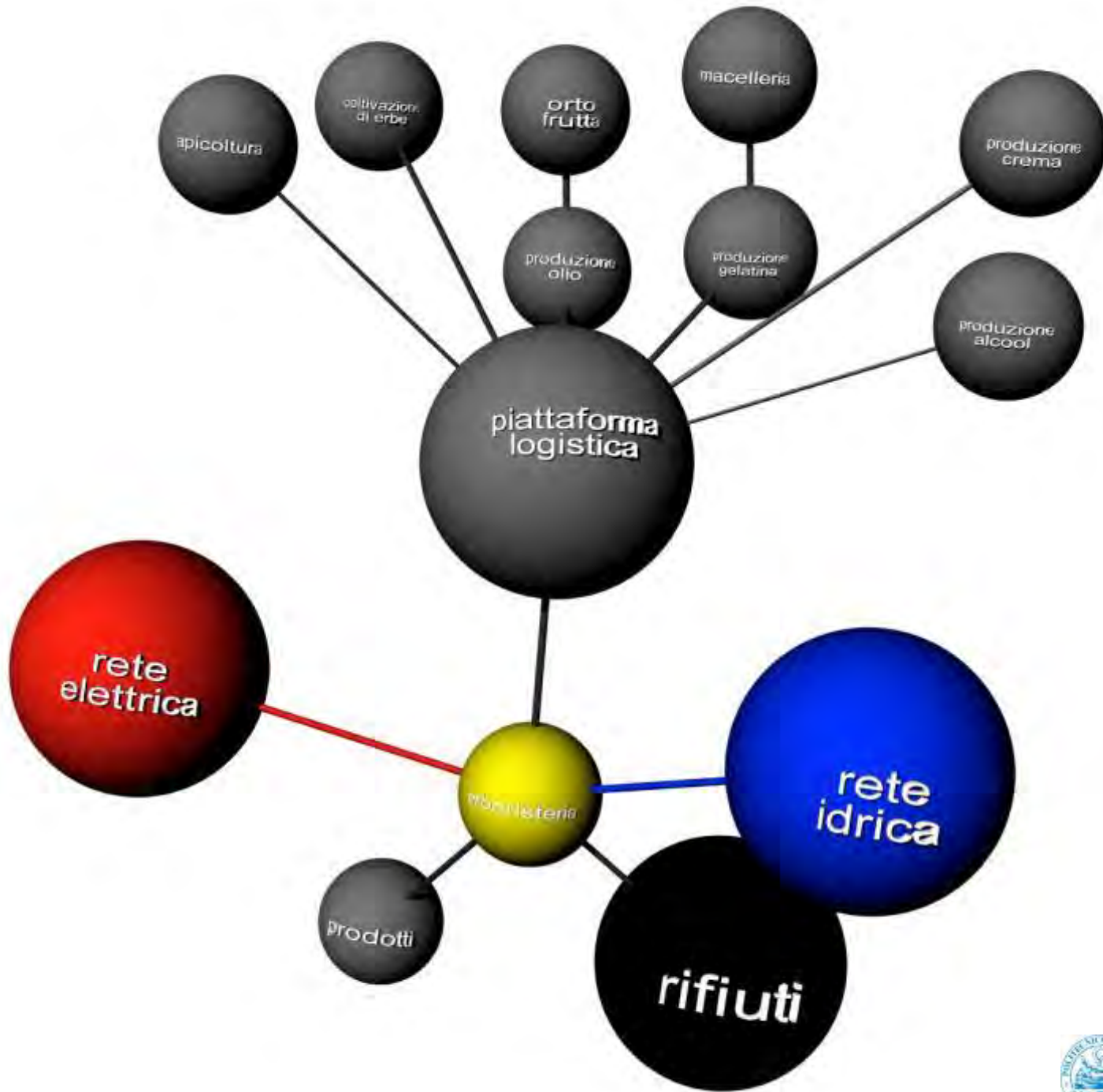


DESIGN

economic-productive model
actual







necessity of a new way facing the

design activity
productive processes

in order to obtain ecological goods

planning the flows of matter and energy
that flow from a system to another one



economic-productive model systemic



SYSTEMIC DESIGN Guidelines



The output (waste) of a system becomes the input (resource) for another one, creating:

- an increase in cash flow;
- new job opportunities.



SYSTEMIC DESIGN Guidelines

OUTPUT INPUT



The output (waste) of a system becomes the input (resource) for another one, creating:

- an increase in cash flow;
- new job opportunities.

RELATIONSHIPS



The relationships generate the system:

- each one contributes to the system;
- the relationships can be within the system or outside of it.

AUTO-GENERATION



Self-producing systems sustain themselves by reproducing automatically, thus allowing them to define their own paths of action and jointly coevolve.

ACT LOCALLY



The local context is fundamental because

- it values local resources: humans, culture and materials;
- it helps resolve local problems by creating new opportunities.

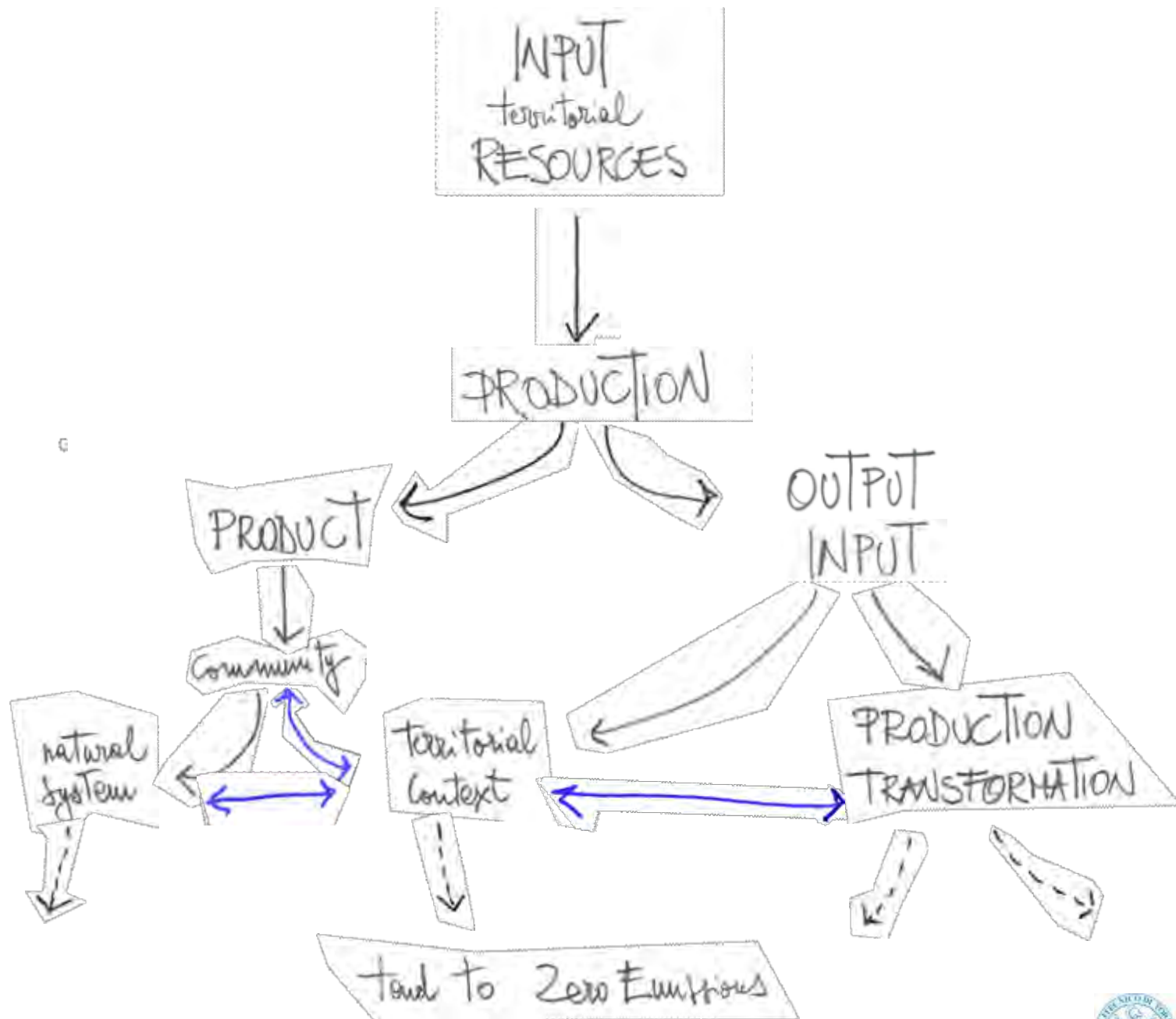
MAN AT THE CENTRE OF THE PROJECT

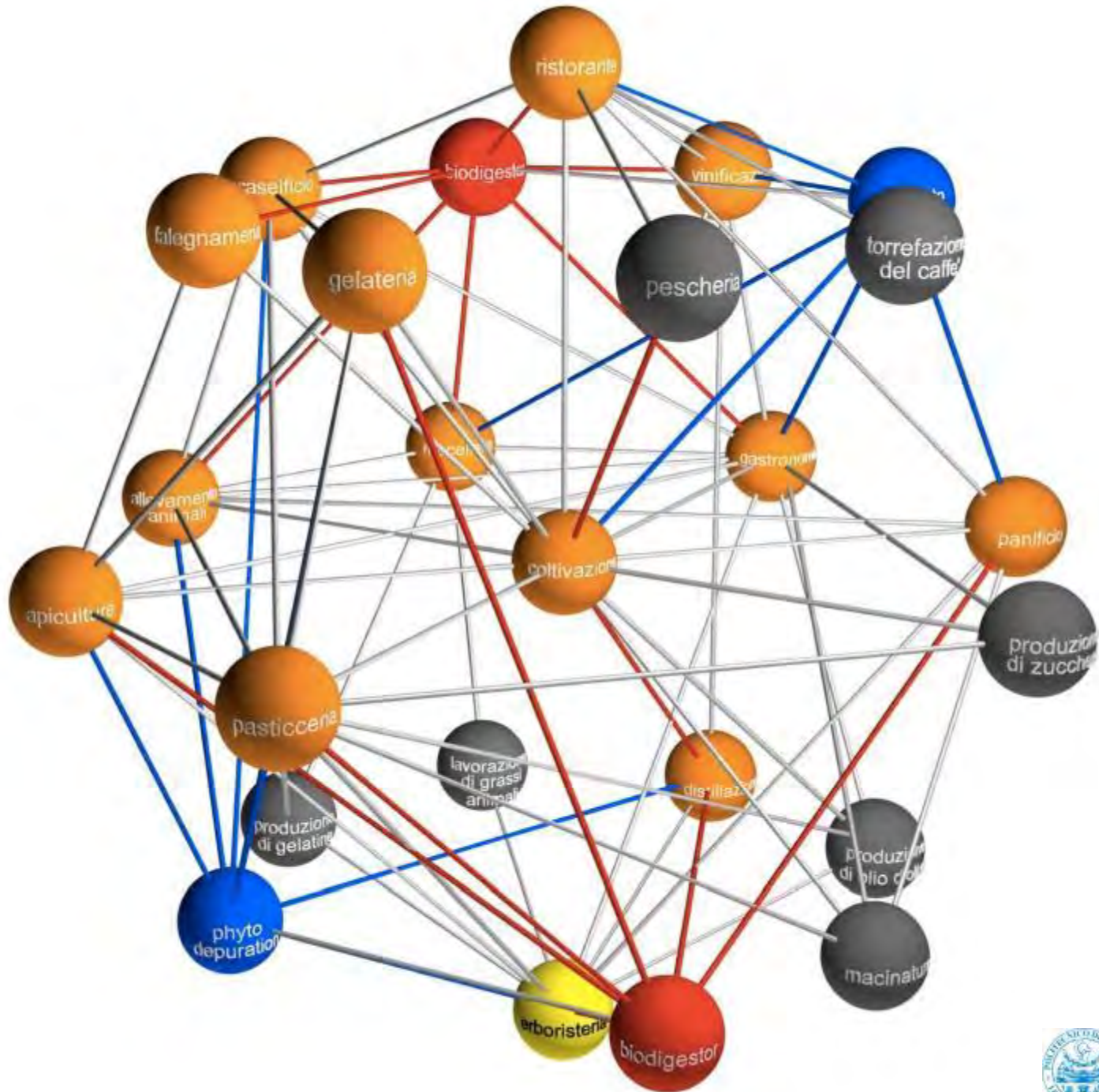


Man connected to own environmental, social, cultural and ethic context.



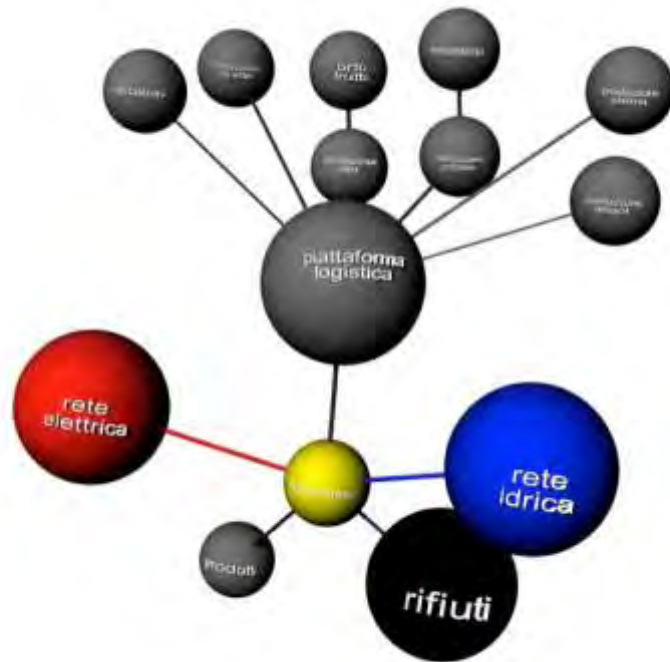
DESIGN



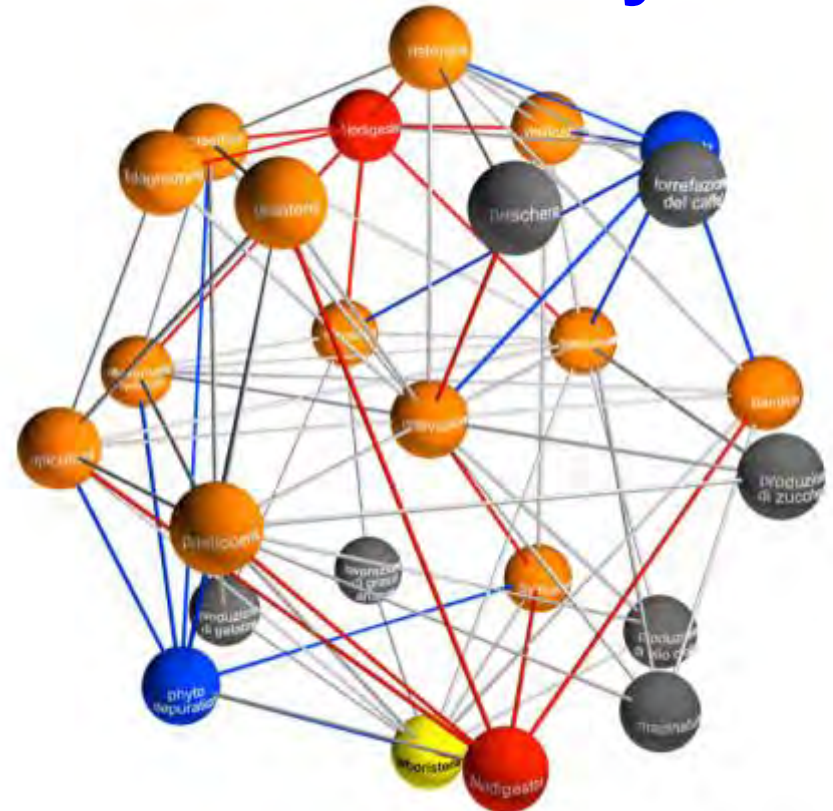


connected activities

actual



systemic



quality by certification

competitive economy

disconnection from the territory

identity in the product

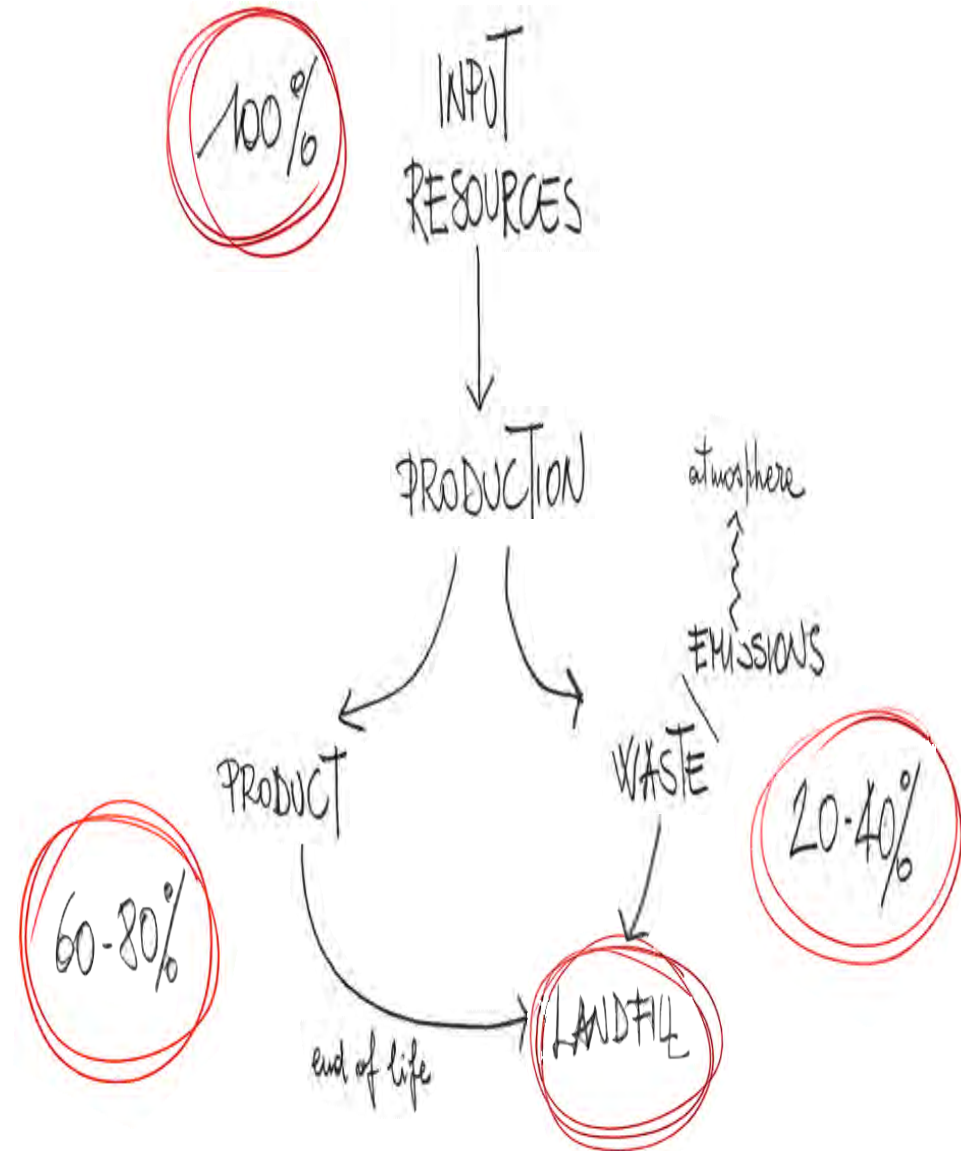
LINEAR approach

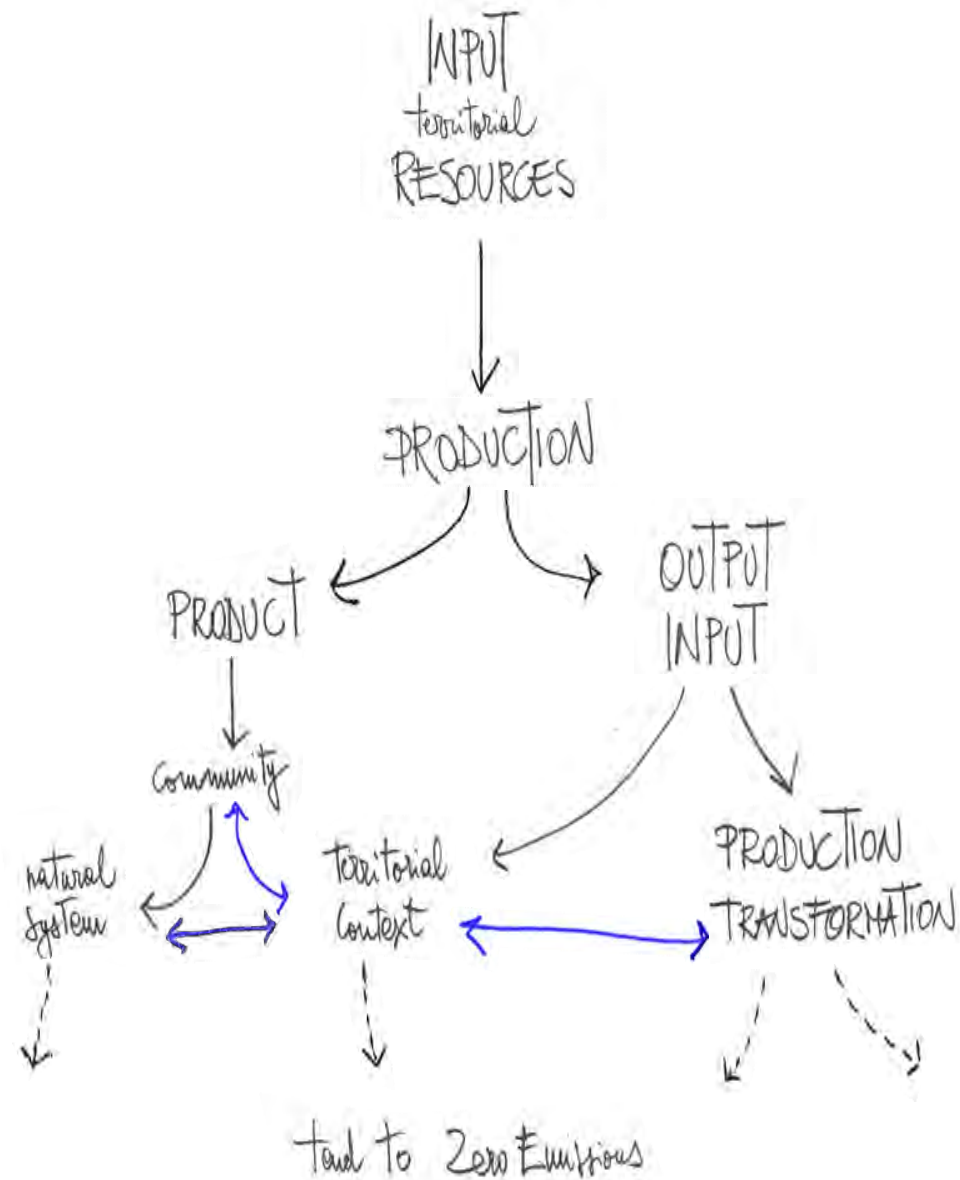
disposable

globalization

competition and quantity

ownership





quality by the system

economy by connections

relations between actors

identity in the territory

SYSTEMIC approach

output-input

cultural identity

sharing and quality

wellness



quality by certification

competitive economy

disconnection from the territory

identity in the product

LINEAR approach

disposable

globalization

competition and quantity

ownership

quality by the system

economy by connections

relations between actors

identity in the territory

SYSTEMIC approach

output-input

cultural identity

sharing and quality

wellness



with **the flows of matter and energy**
that flow from a system to another one

towards **zero emissions**

creating

a **new economic-productive model**

a **community of strongly related people**

a **conscious connection with the territory**



production



environment

**economic-productive
reality**



LARGE

n°0,1%

22%

MEDIUM

n°0,5%

13%

20%

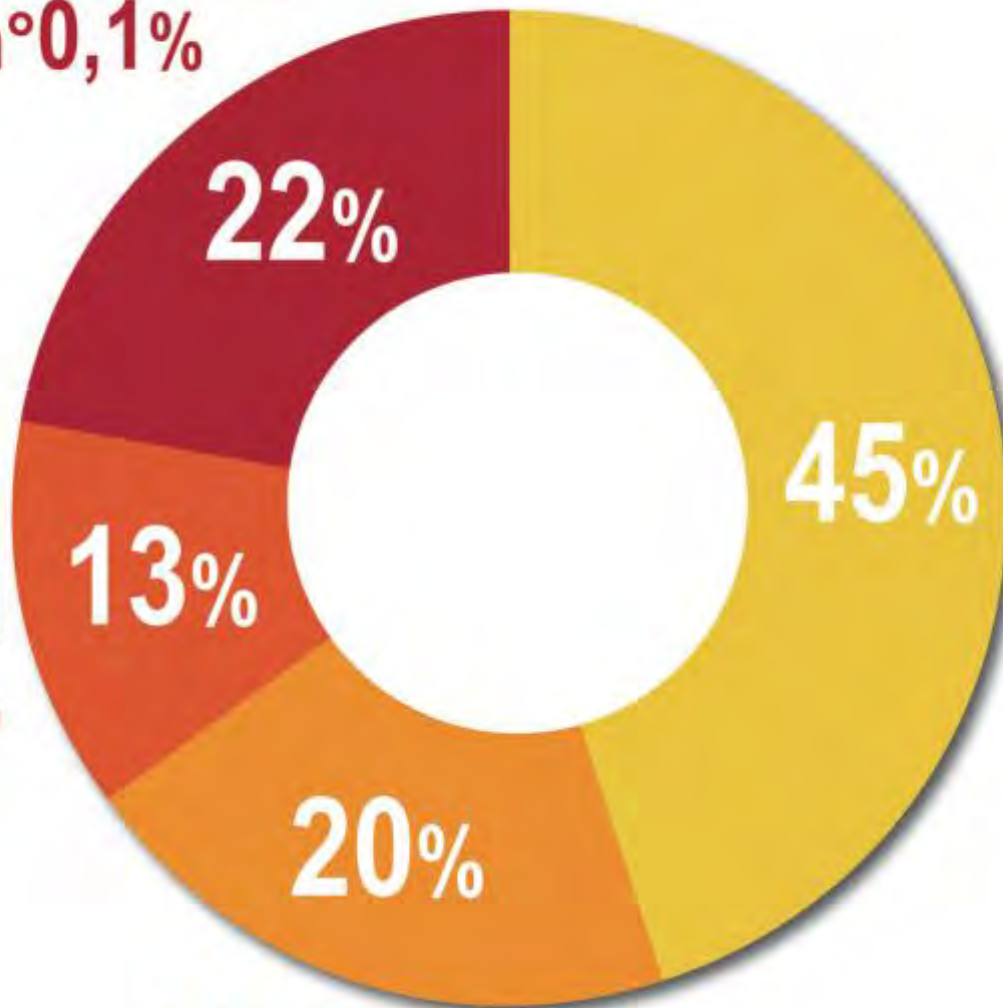
SMALL

n°4,8%

MICRO

n°94,6%

45%



characteristic values for enterprises

medium - large

low cost location
low cost workers
low taxes
easy logistics
local exploitation
unstable activity
global market
stock exchange

micro – small

territory with material culture
skilled workers
widespread knowledge
local resources
local development
permanent establishment
local market
local knowledge

**systemic examples
in action or planned**



2006



2012

EVENTI A RIDOTTO IMPATTO AMBIENTALE

promotori dell'iniziativa



responsabile scientifico



con il patrocinio



Partnership e collaborazioni

17 partner ambientali

Novamont, Palm, Comieco, Ricrea, Verallia, CO2Balance, Rilegno, Sabox, EverGreen, GTT, Bra Servizi, Smat, Compass Group, Bus Company, Philips, Legambiente, Sotral

22 realtà imprenditoriali per l'ambiente

Lavazza, PPG Industries, Sciolla Company, Sinbit, Molecole Sistemiche, EcoZema, Ecotecnologie, Entsorga, Ecoglass, L.C.M. snc, Waste Italia, Cartesar Spa, Scambi Sostenibili, Risteco, ToBike, Trenitalia, Lurisia, Liebherr, Eurostampa, Laboratorio Chimico Camera di Commercio di Torino, Forma Aperta, Seag

2006

50.964 sqm

172.400 visitors

188,10 t/waste

16,20% sep. coll.

1,09 kg waste/vis.

0,47 CO₂ kg/vis.

2012

80.000 sqm

220.000 visitors

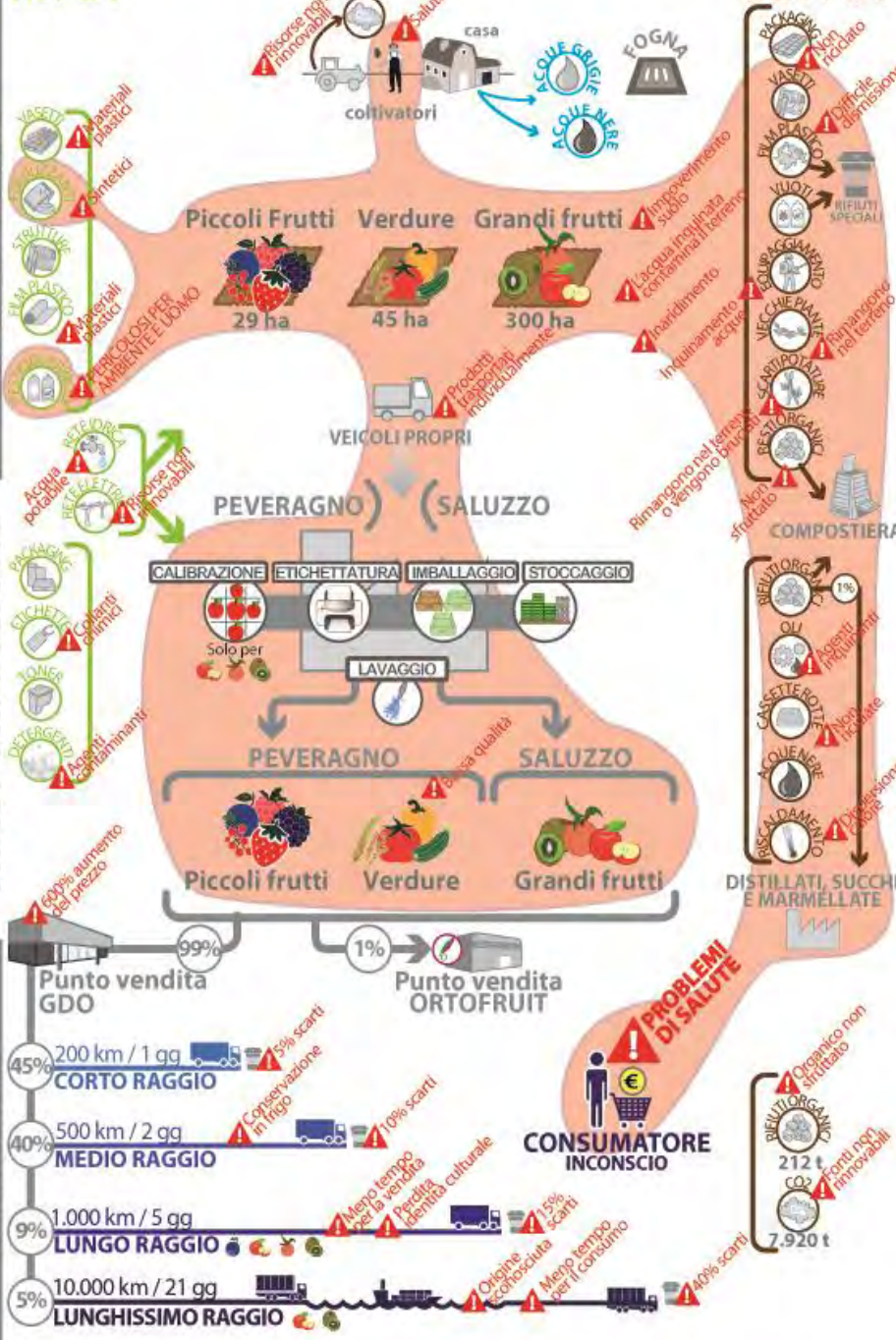
164,00 t/waste

59,10% sep. coll.

0,74 kg waste/vis.

0,15 CO₂ kg/vis.

INPUT



OUTPUT

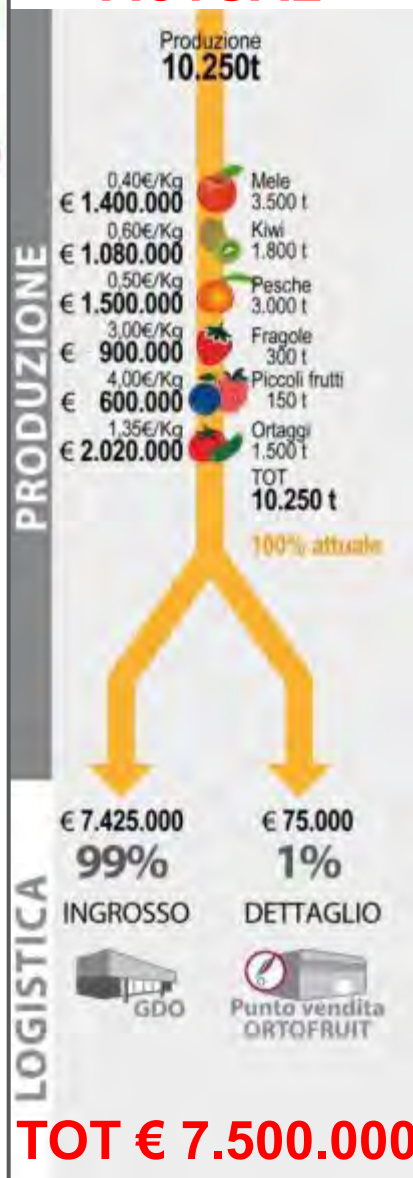




goals in 5 years



ACTUAL



SYSTEMIC APPROACH



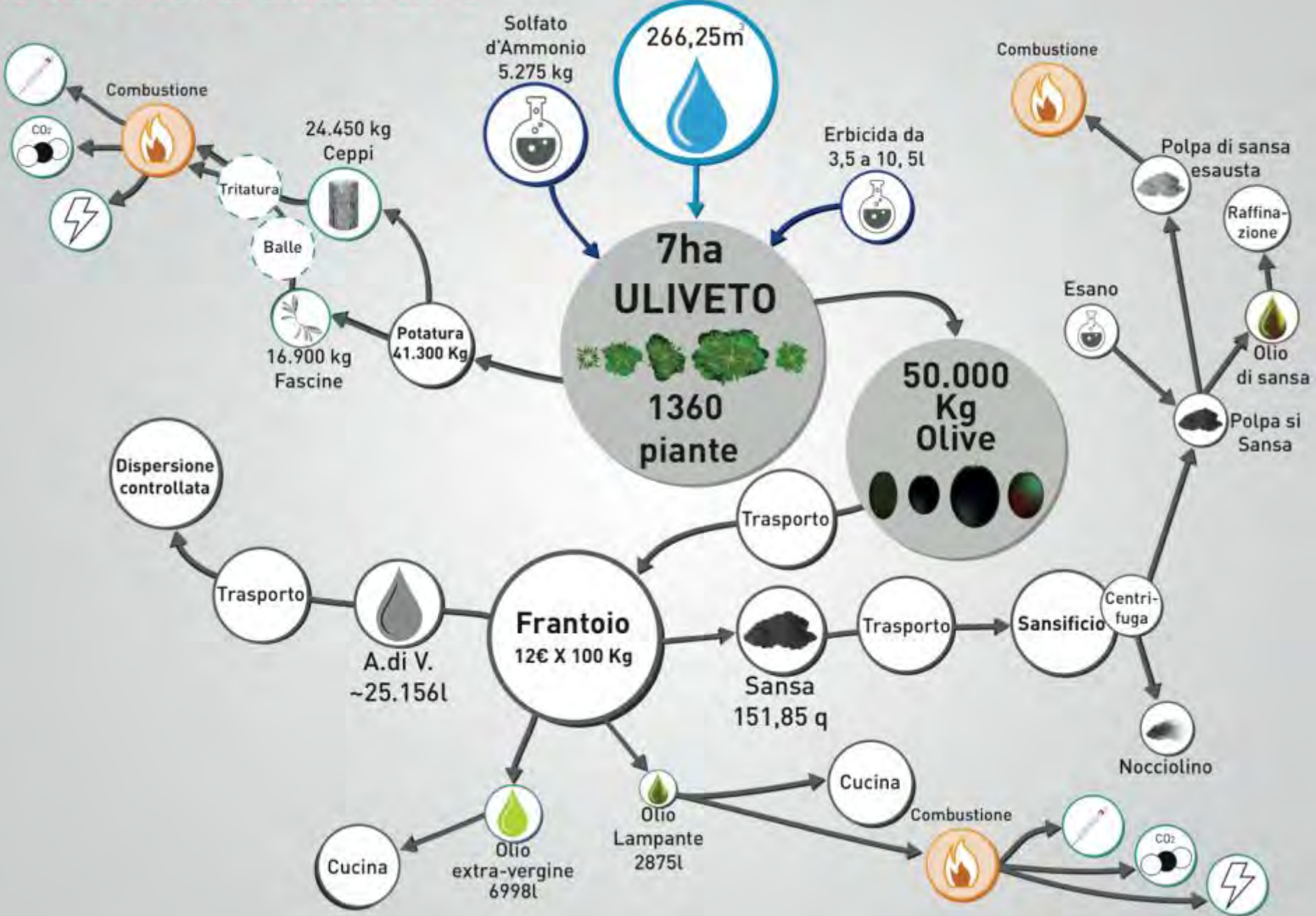
New products



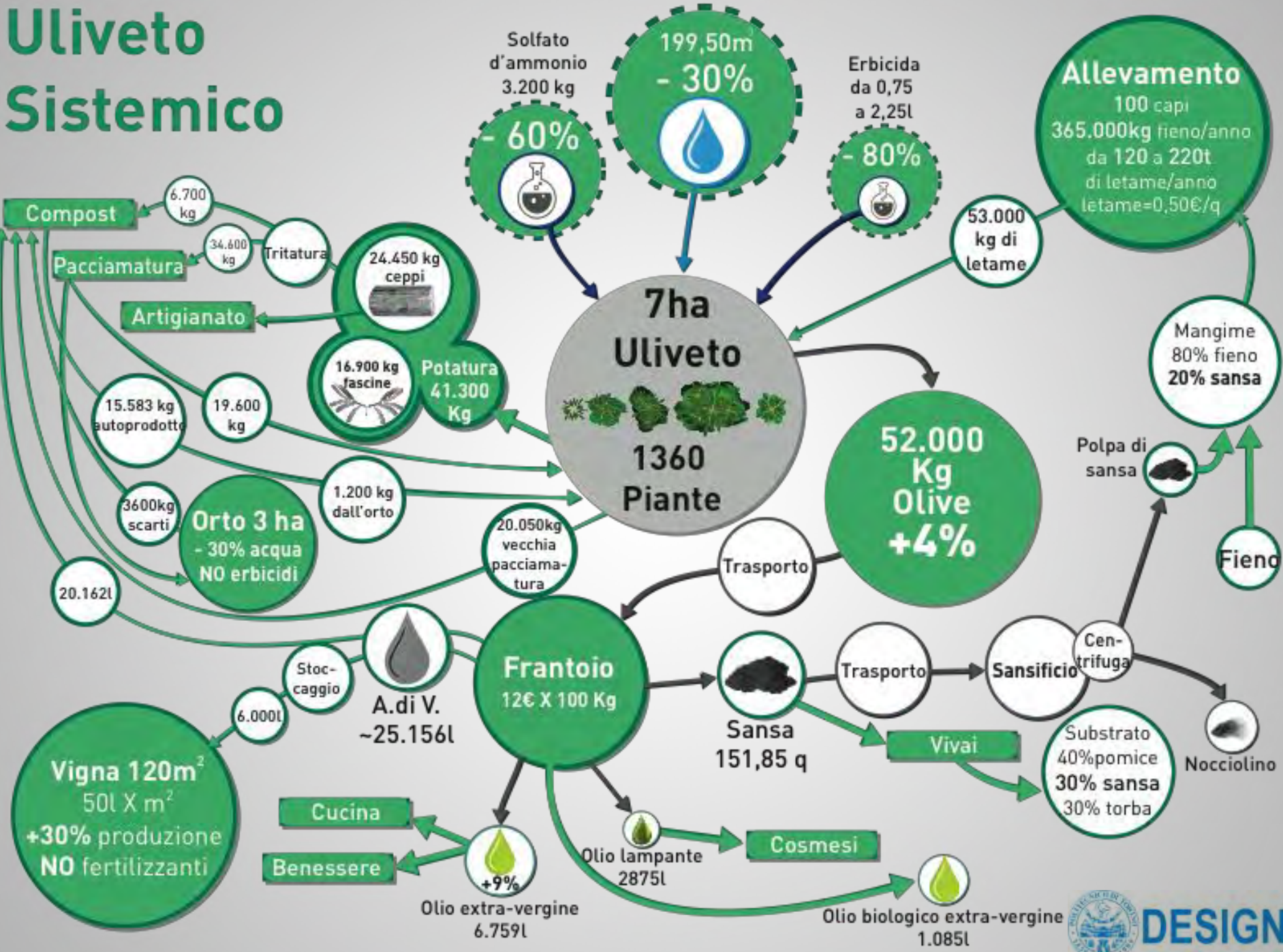
~~TOT € 22.809.484~~

TOT € 18.080.397 (with prudential margin)

Sistema Lineare



Uliveto Sistemico



Approccio Lineare

Tot. ricavi 37.340 €
Tot. costi 19.300 €

EBT 18.040 €

Approccio Sistemico

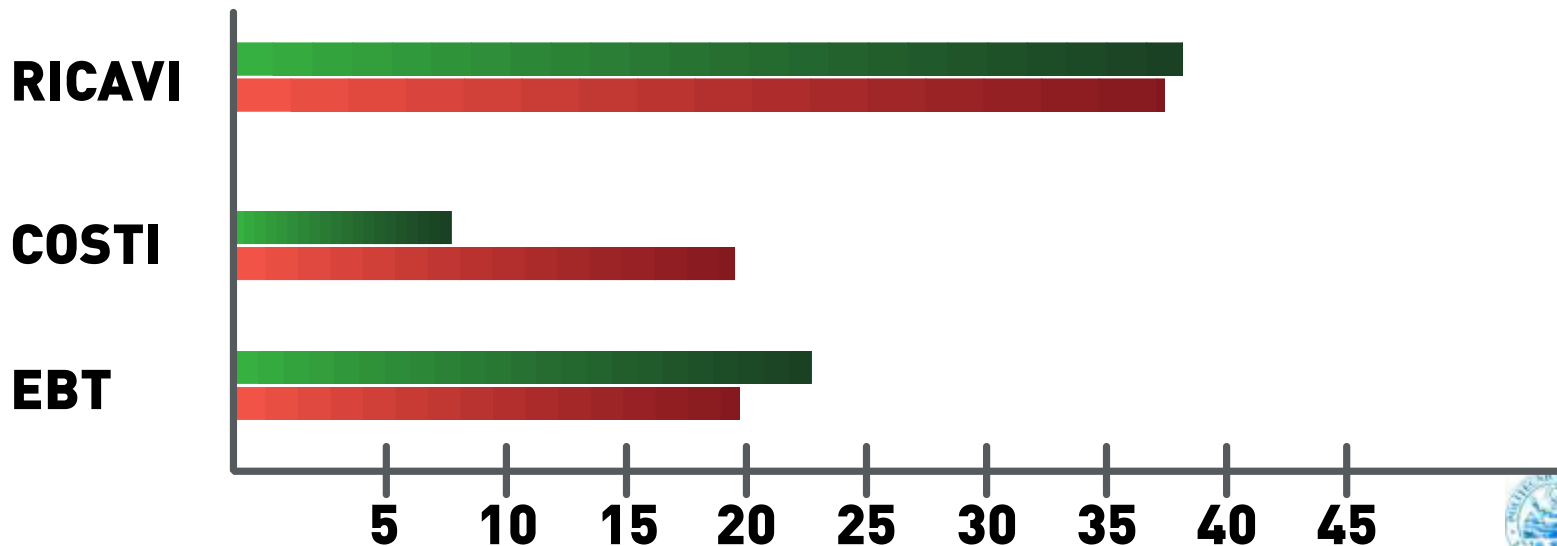
Tot. ricavi 37.360 €
Tot. costi 7.100 €

Tot. consumi annui 6.900 €

EBT 23.360 €

Tot. investimenti 85.000 €

EBT (primi 5 anni) da 14.500 €



territorial potentialities

www.systemsdesign.polito.it



GIAVENO

Morphology of the territory

TERRITORIO
QUALITÀ

INDIETRO
HOME



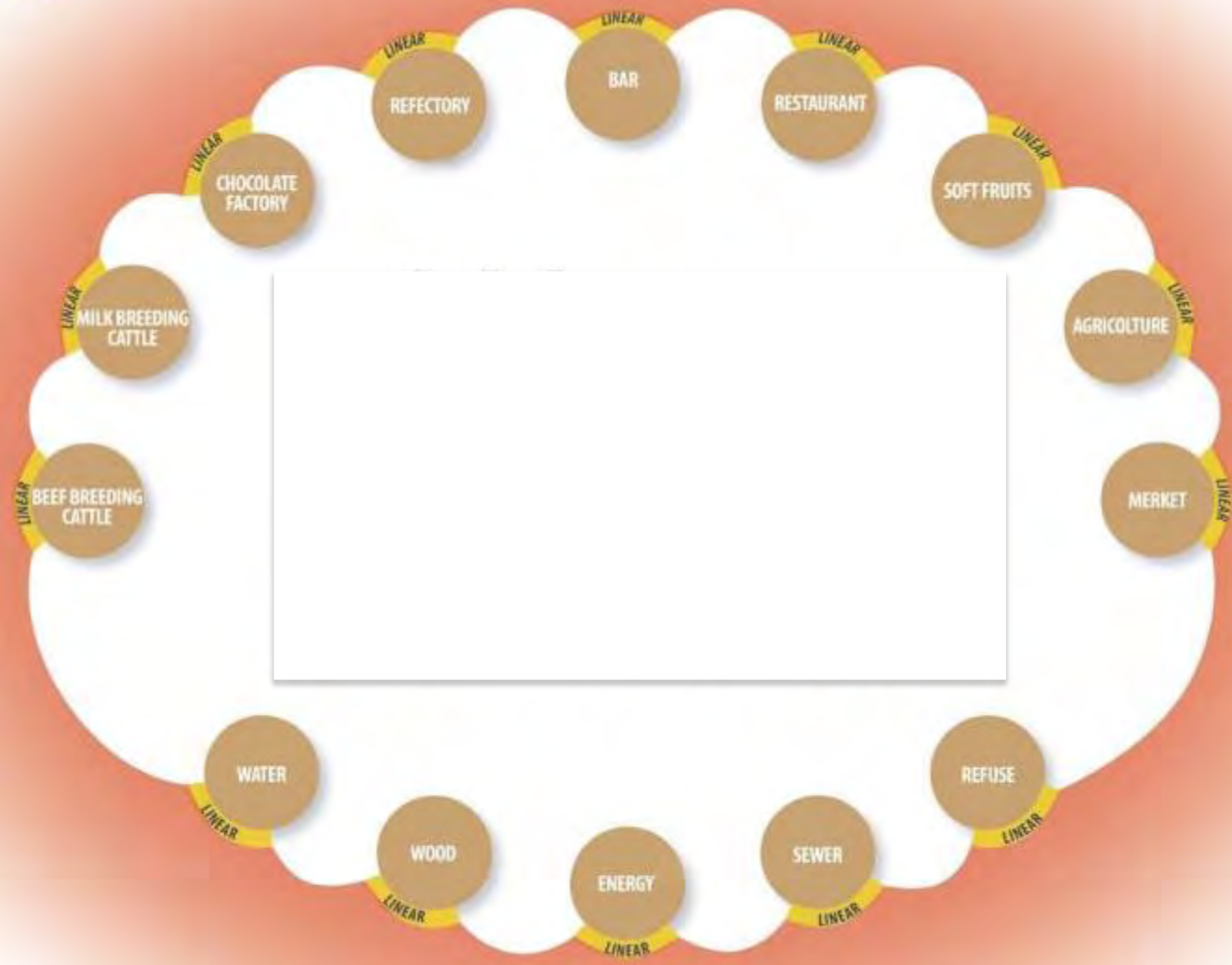
- 🗺️ **Surface area of Giaveno:** 7.176 ha
- ⚡ **Altitude:** 403-506 m als
- 👤 **Population:** 16.740
- 🌊 **Torrent Sangone:** Flow 4,6m³/s

- ☀️ **Average annual temperature** 10/12 ° C
- ☔ **Average annual rainfall** 1000 mm
- ☀️ **Average annual hours of sunshine** in 1690 h
- 🌬️ **Average annual wind** 4 km / h

GENERAL RELATIONS

linear approach

LINEARE



CONFRONTO
INDIETRO
HOME



DESIGN

GENERAL RELATIONS

linear approach

LINEARE

CONFRONTO
INDIETRO
HOME



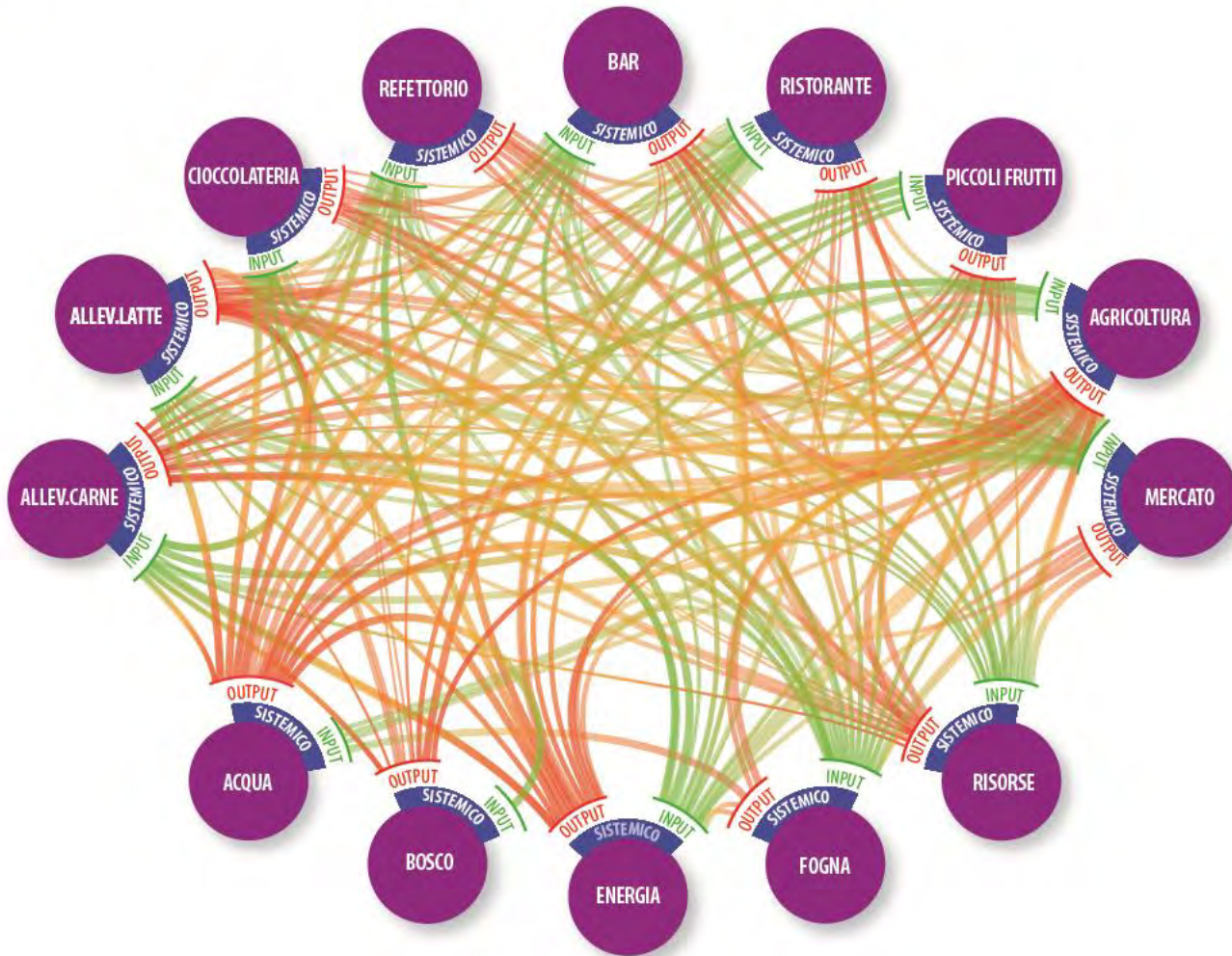
DESIGN

RELAZIONI GENERALI

approccio sistemico

SISTEMICO

CONFRONTO
INDIETRO
HOME



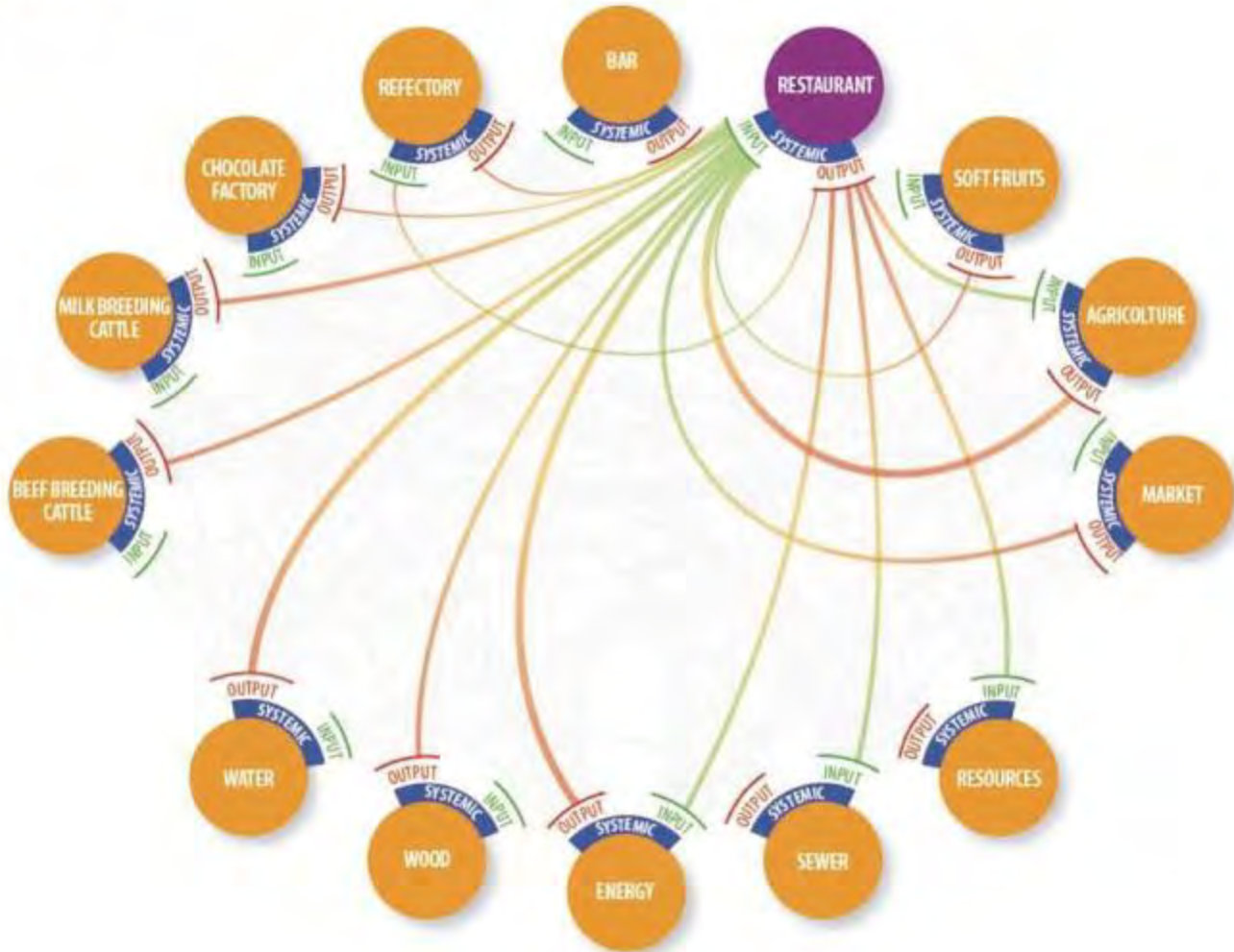
DESIGN

RESTAURANT RELATIONS

systemic approach

SISTEMICO

INDIETRO
HOME



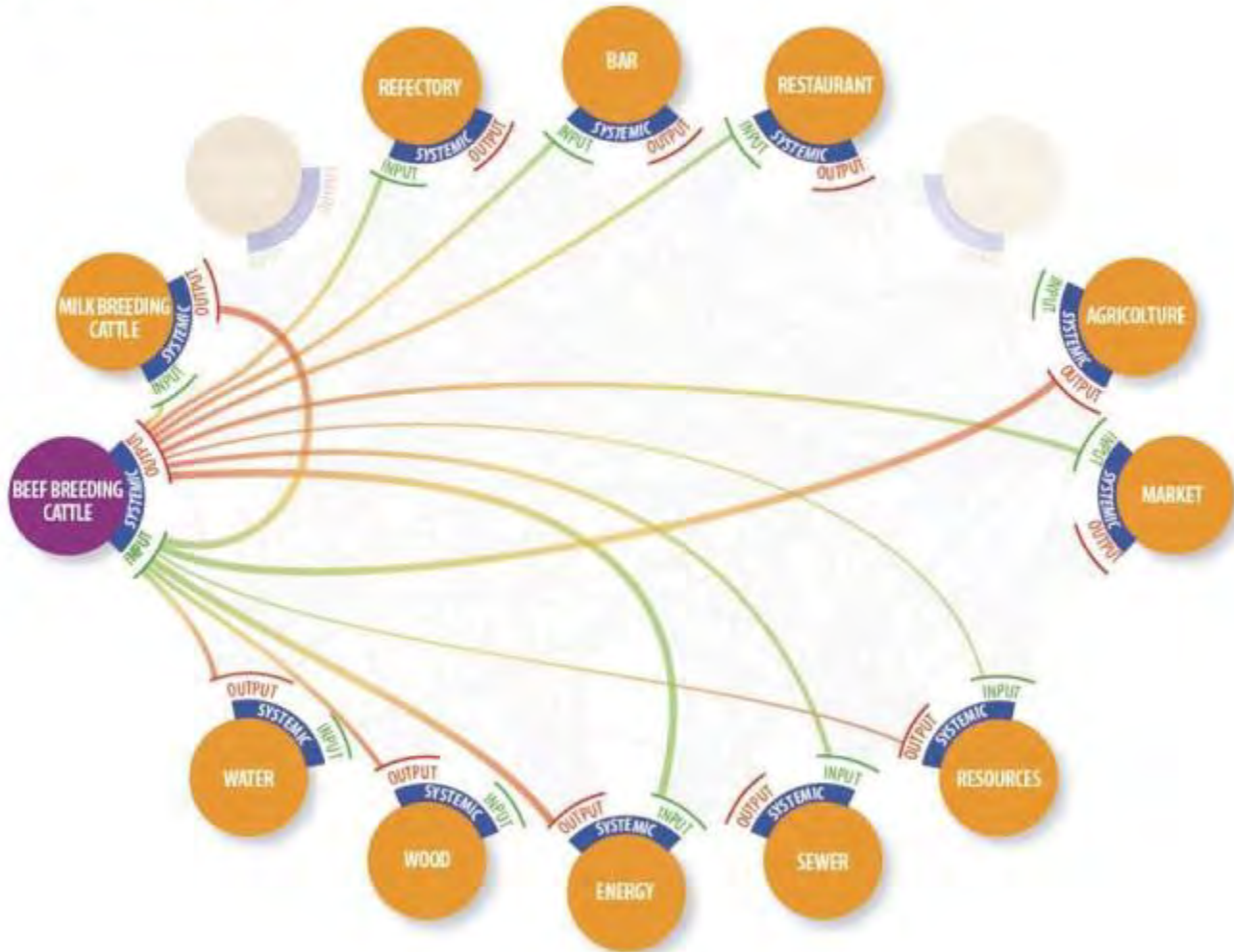
DESIGN

BEEF BREEDING CATTLE RELATIONS

systemic approach

SISTEMICO

INDIETRO
HOME



DESIGN

24 ANALYZED activities



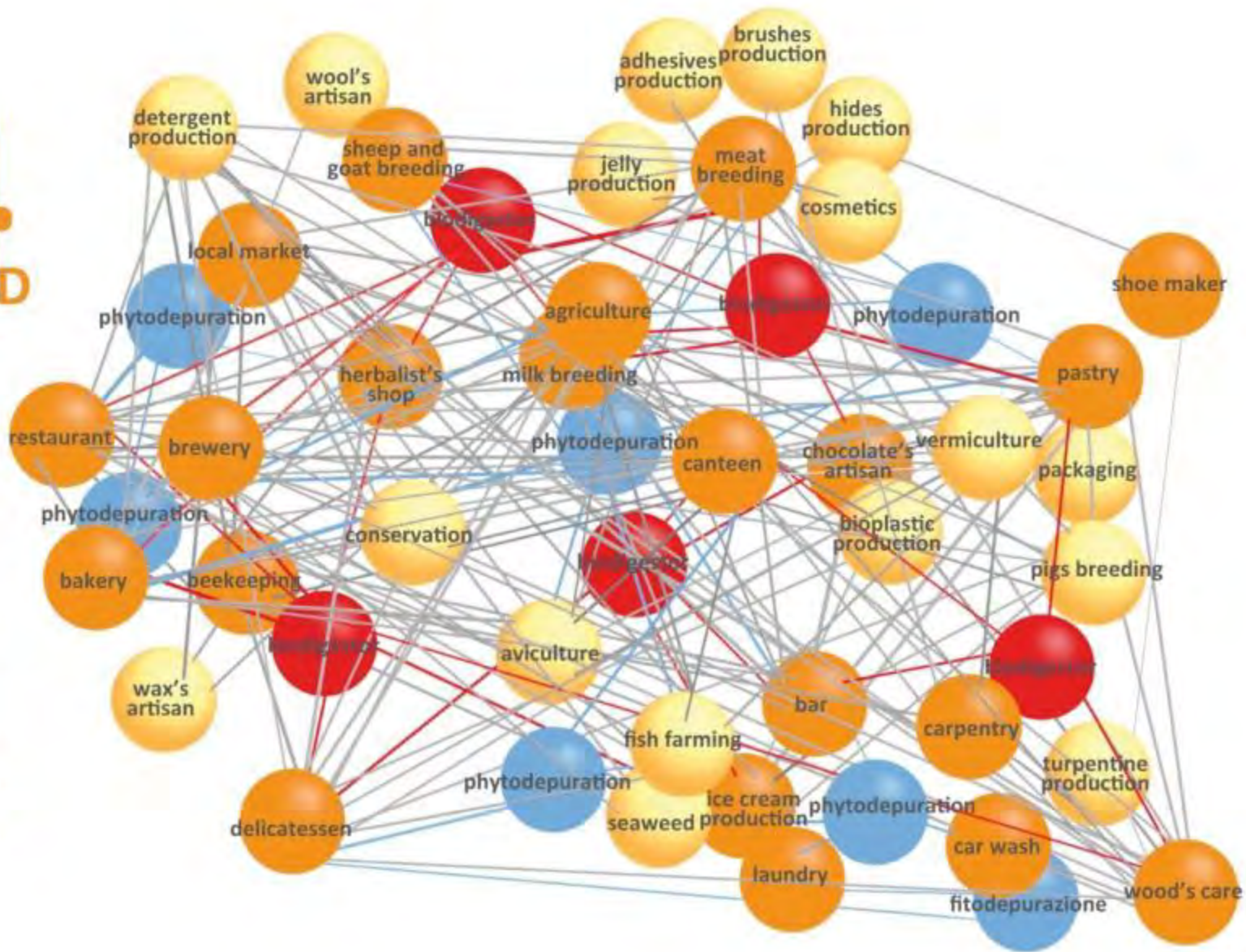
24
ANALYZED
activities



24
ANALYZED
activities

+

NEW
activities
26



produce



24 ANALYZED activities

agriculture
meat breeding
slaughter house
butcher shop
milk breeding
dairy
sheep and goat
breeding
bakery
brewery
ice cream prod.

pastry
chocolate's artisan
restaurant
canteen
delicatessen
bar
local market
herbalist's shop
beekeeping
wood's care
carpentry
car wash
laundry
shoe maker

24 ANALYZED activities

- agriculture
- meat breeding
- slaughter house
- butcher shop
- milk breeding
- dairy
- sheep and goat breeding
- bakery
- brewery
- ice cream prod.
- pastry
- chocolate's artisan
- restaurant
- canteen
- delicatessen
- bar
- local market
- herbalist's shop
- beekeeping
- wood's care
- carpentry
- car wash
- laundry
- shoe maker

produce



NEW activities 26

- biodigestor**
- phytodepuration
- fish farming
- essiccation
- juice production
- jam production
- conserve production
- vinegar production
- milling
- coffee toasting
- malt production

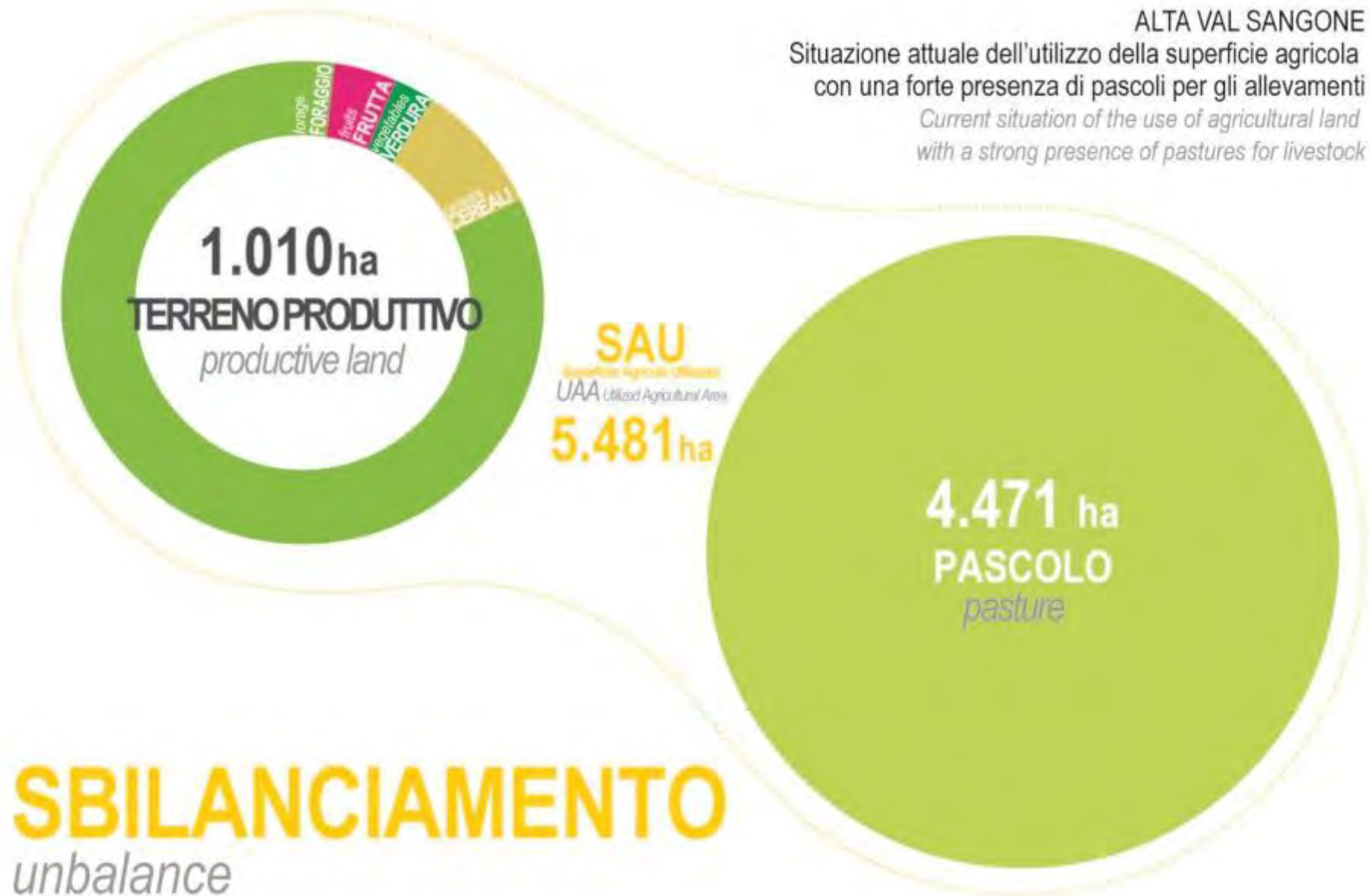
conservation

- seaweed
- vermiculture
- aviculture
- pigs breeding
- bioplastic production
- packaging
- wool's artisan
- detergent production
- wax's artisan
- turpentine production
- jelly production
- adhesives production
- cosmetics
- brushes production
- hides production

ALTA VAL SANGONE

Situazione attuale dell'utilizzo della superficie agricola
con una forte presenza di pascoli per gli allevamenti

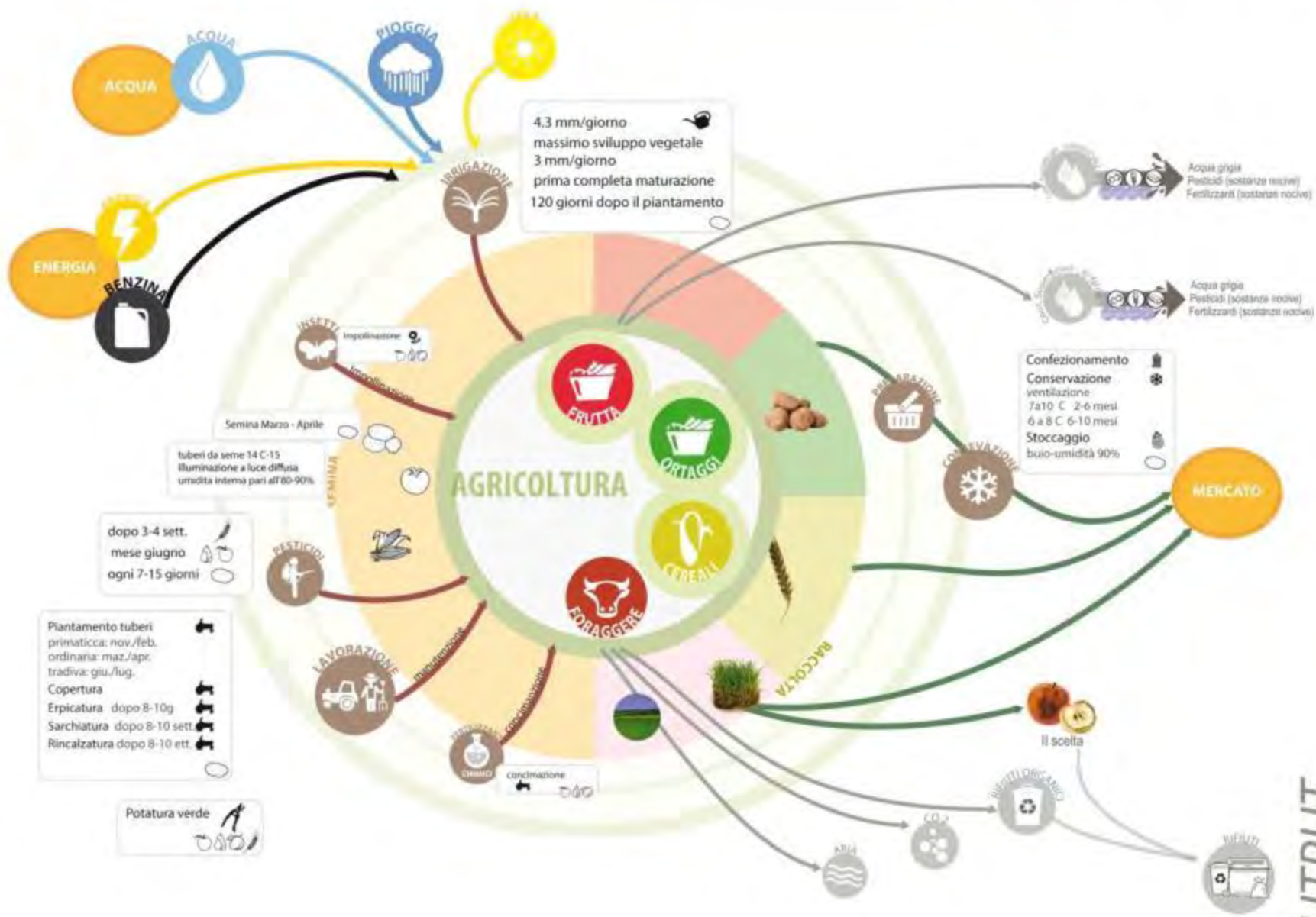
*Current situation of the use of agricultural land
with a strong presence of pastures for livestock*



SBILANCIAMENTO
unbalance

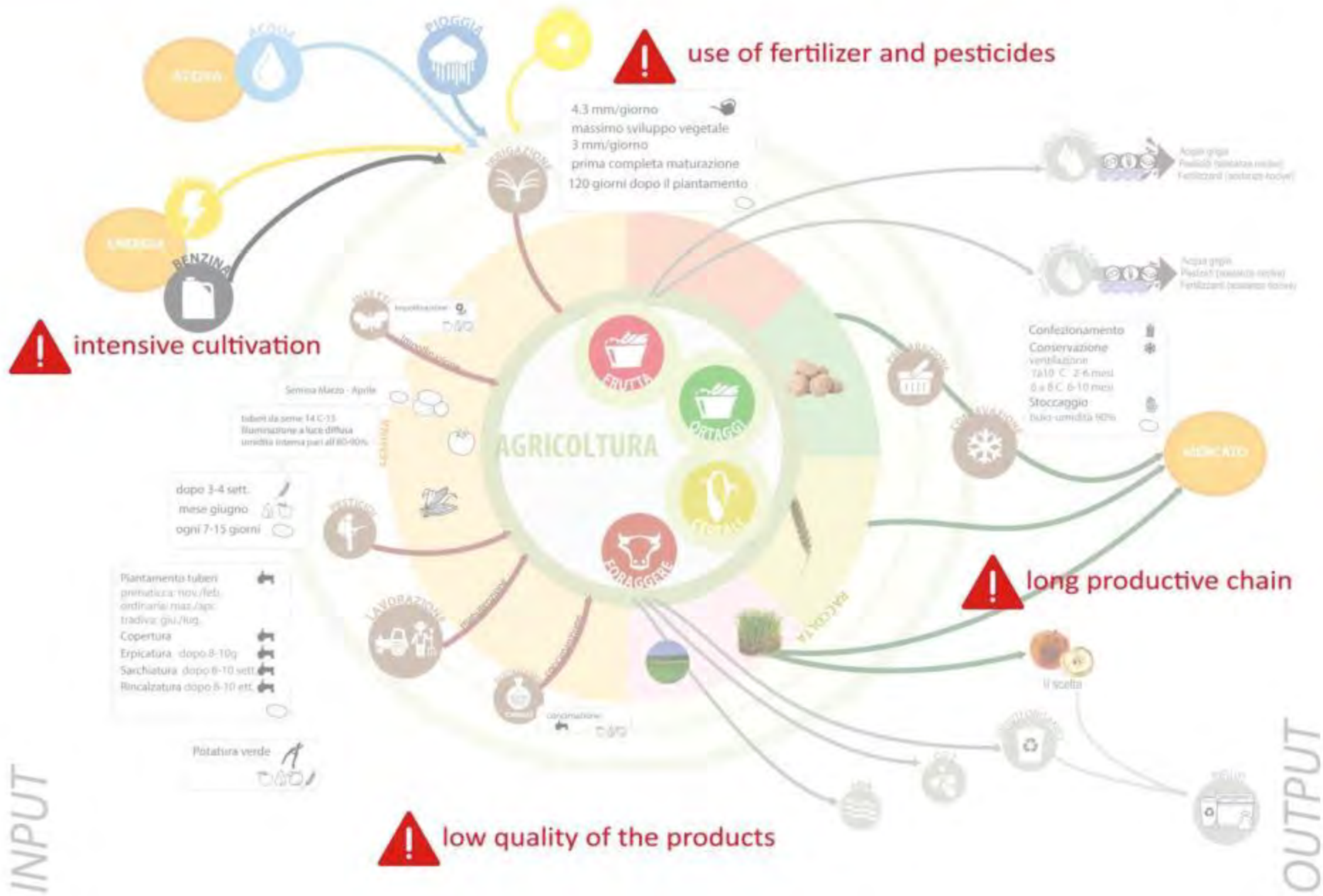


DESIGN

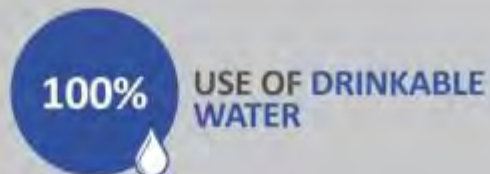


INPUT

OUTPUT



TERRITORY'S ACTUAL RESOURCES



ALTA VAL SANGONE

Ridefinizione dell'utilizzo della superficie agricola
e differenziazione delle culture

*Redefining of agricultural land use
and differentiation of cultures*



SAU
Superficie Agricola Utilizzata
UAA Utilized Agricultural Area
2.644 ha

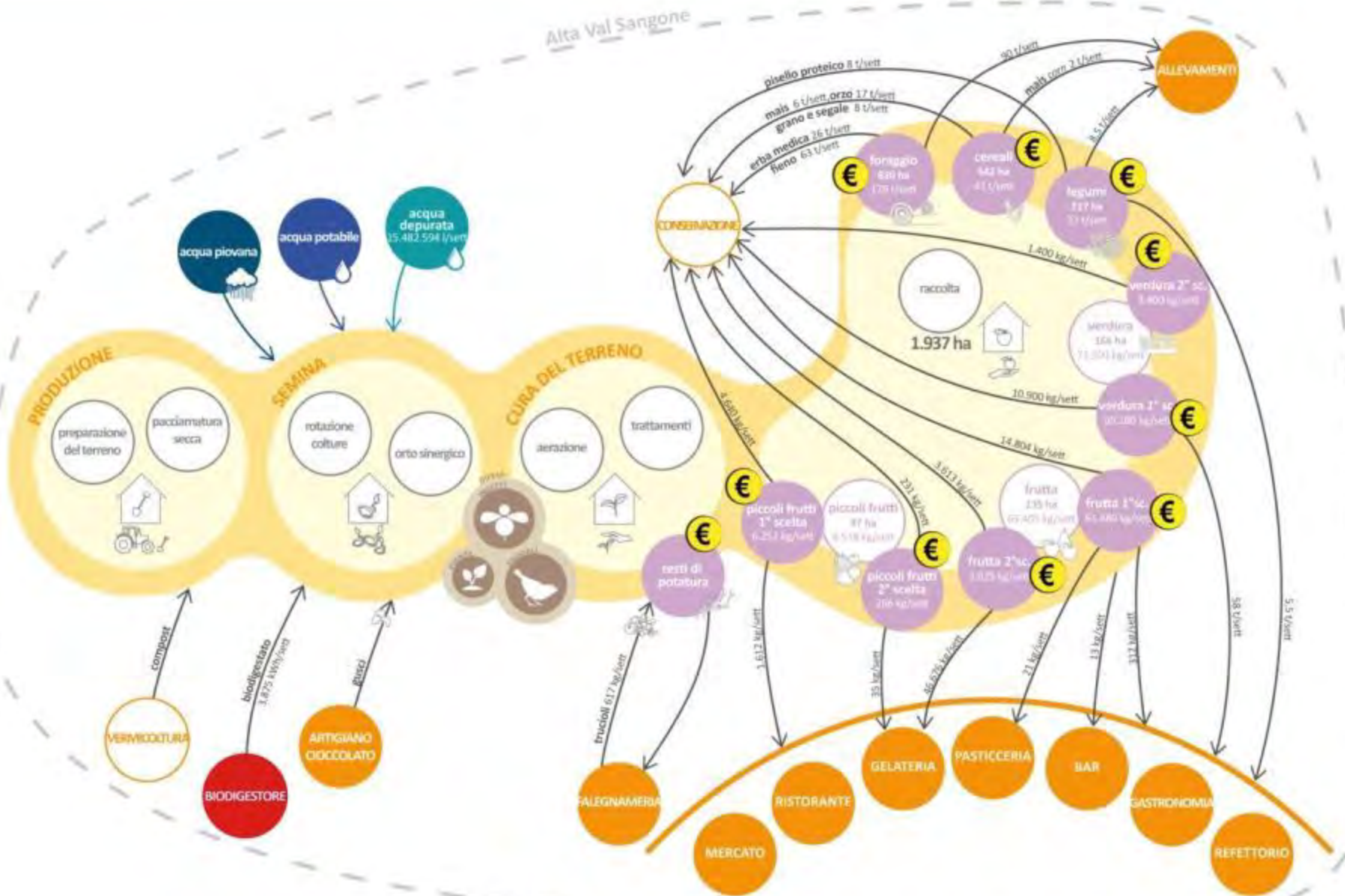
706 ha
PASCOLO
pasture

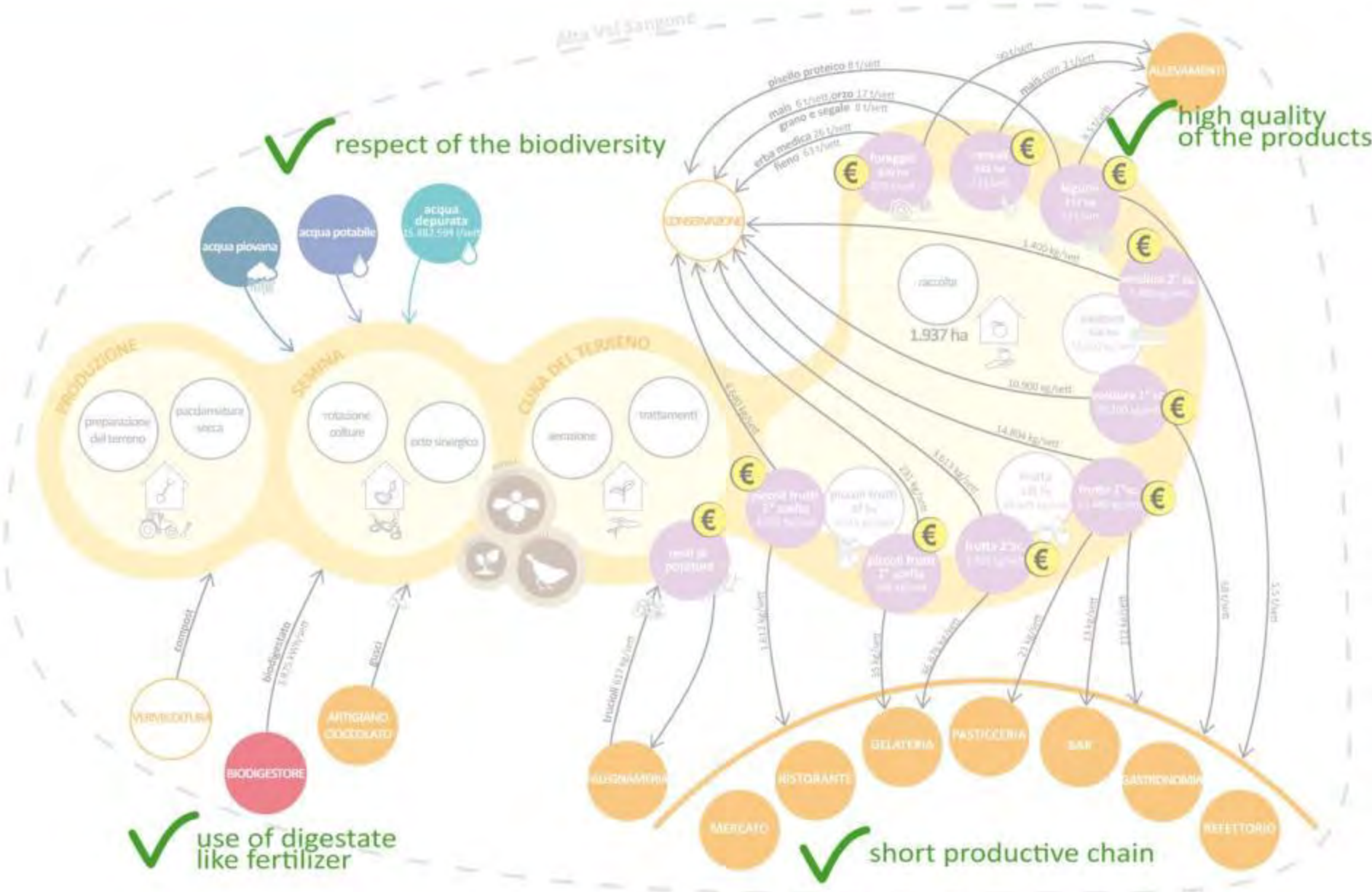
BILANCIAMENTO

balance



DESIGN





TERRITORY POTENTIAL



depurated water
623.700 m³/y

PRODUCTION OF depurated water FROM PHYTODEPURATION

-81%

USE OF DRINKABLE WATER

100%
autoproduced energy

PRODUCTION OF ELECTRIC ENERGY

- solar 75%
- hydroelectric 7%
- biodigestor 18%

surplus energy
+ 18%

PRODUCTS



NEW PRODUCTS

- legumes
- fruits II choice
- soft fruits II choice
- soft fruits II choice
- vegetables II choice
- pruning waste

NEW OPPORTUNITIES



actual COMPARISON systemic

n°TOTAL
ACTIVITIES

470 → 610 + 30%

n°TOTAL
EMPLOYEES

1.500 → 2.000 + 35%

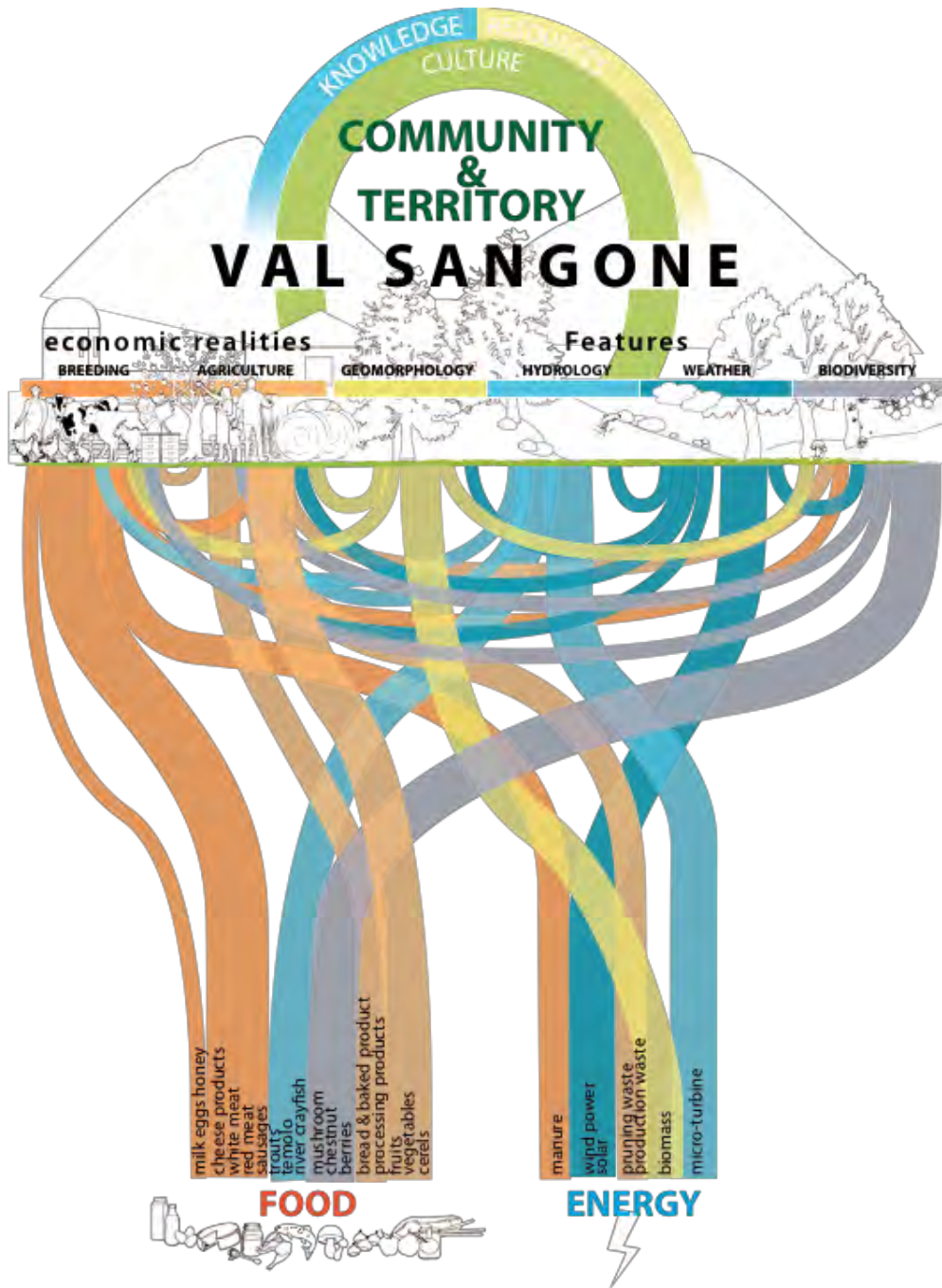
EBT
TOTAL

4,9 MI € → 36 MI € ANALYZED
ACTIVITIES

+

5 MI € NEW
ACTIVITIES
15% to 36 MI

41.000.000 € + 720%



TERRITORY

strong identity
valorisation
local resources
implementation of tourism/agriturism

SOCIETY

aware
with wealth
happy

CULTURE

valorisation of local know-how

LOGISTIC

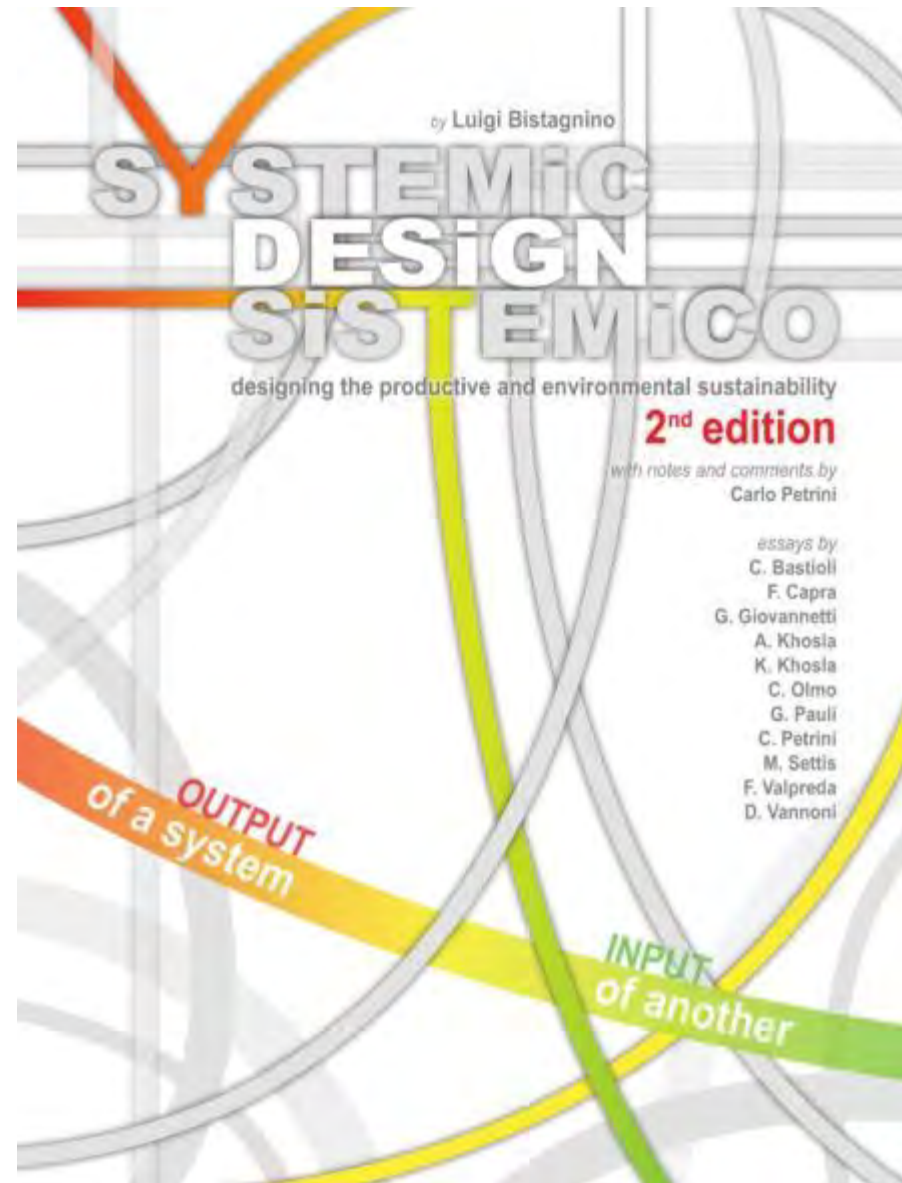
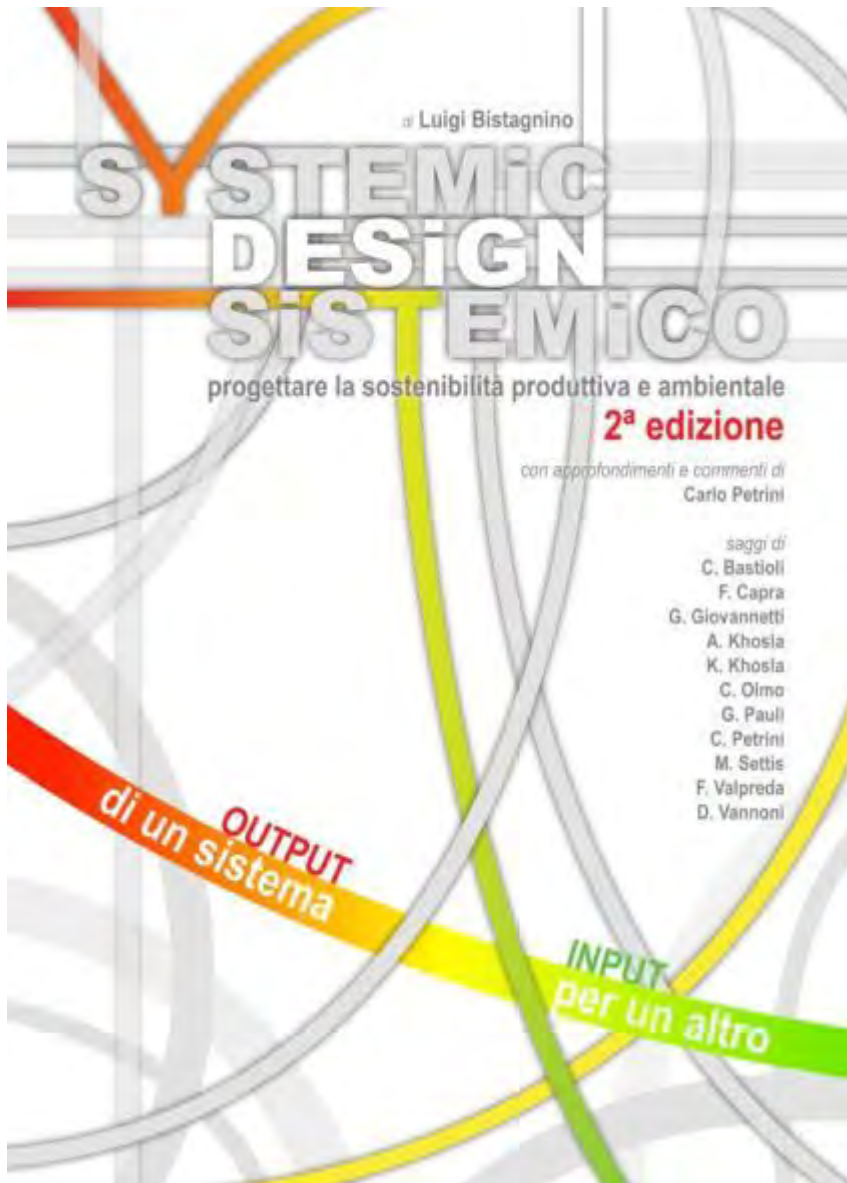
local distribution
short distances

ECONOMY

solid
generated by the local microeconomy
new job place

41.000.000 € + 720%





italiano

english

e-book

micro macro

**Il complesso delle micro relazioni sistemiche
genera il nuovo modello economico-produttivo**

a cura di
Luigi Bistagnino



Edizioni
Ambiente



DESIGN