TWB GREEN TECH FOOD HUB

Italian technology excellence and strong local tradition: a winning combination

An Italian technology innovation project for the first Tech Green Food Hub which is to focus on pork products using Italian technology and systems which comply to European standards of quality, hygiene and food safety.

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according to European safety and quality standards,

environmentally friendly

The project aims at setting up an integrated technological Hub, specialized in pigs breeding and meat processing, capable to provide goods, services and technological skills in order to ensure a high quality pork meat production of 1,5 million ton per year, according to EU standards and carrying an Italian certification.

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The Project

Location: 1 km²

Rural families involved: 15.000

New European-like animal husbandry farms: 10.000

Workforce in industry and services: 50.000 units

Investments for innovative TWB GREEN TECH FOOD HUB conforming to European standards

Turnover: 5 billion euro (European sanitary certificated food)

Italian Institutions and enterprises involved: 100

Managers, technicians and researchers involved: 500

Innovative breeding plants: 12 million m³

Renewable energy: 2 million m² of photovoltaic panels

Biogas plants: 200 for a total of 600 megawatt

Partner: Local Ministries or Departments

Italian Partner: TWB Sistema Italia S.p.A

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PROJECT GENERAL TRACEABILITY DIAGRAM

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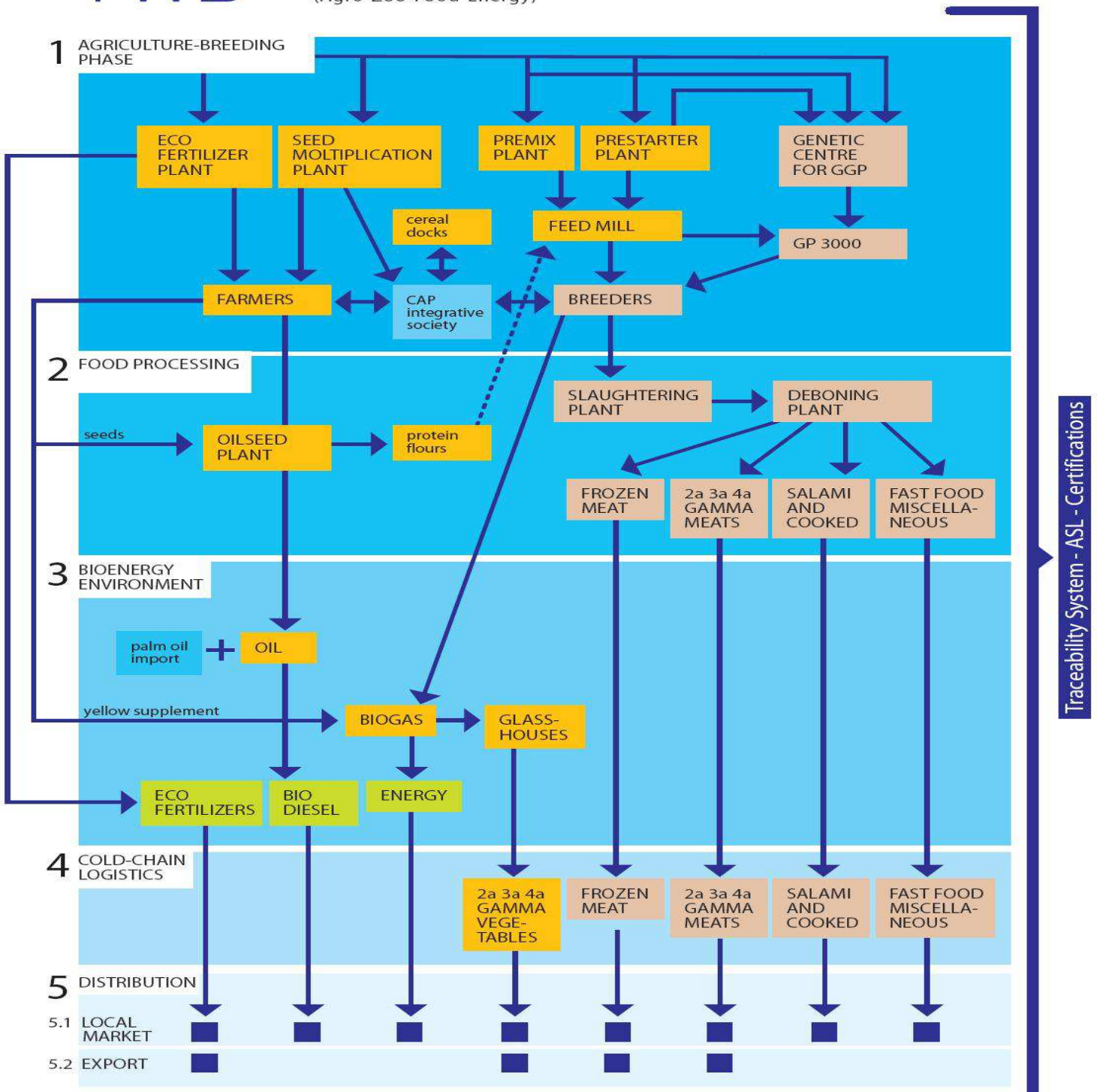
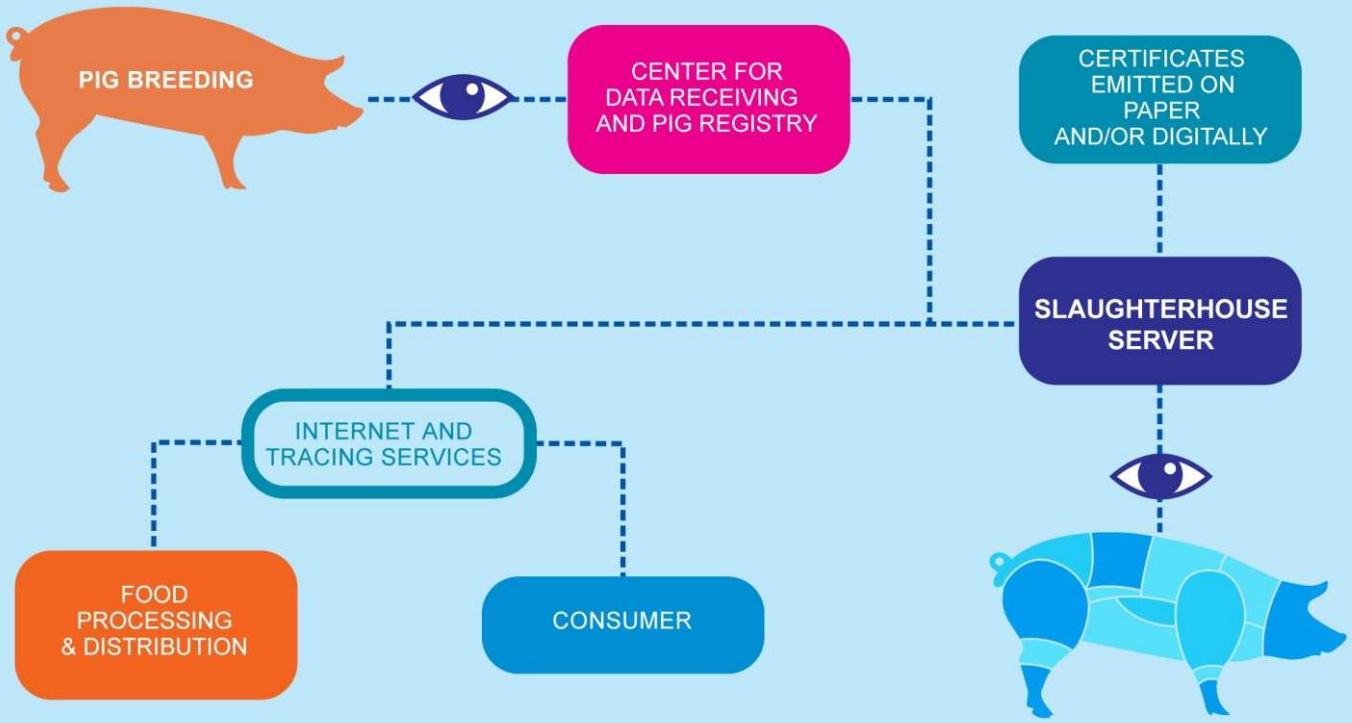
TWB MEAT SECURITY AND SAFETY PROJECT

FOR A NEW ETHICAL AND SUSTAINABLE COOPERATION
(Agro-Zoo-Food-Energy)



Organization System for Traceability and Certification



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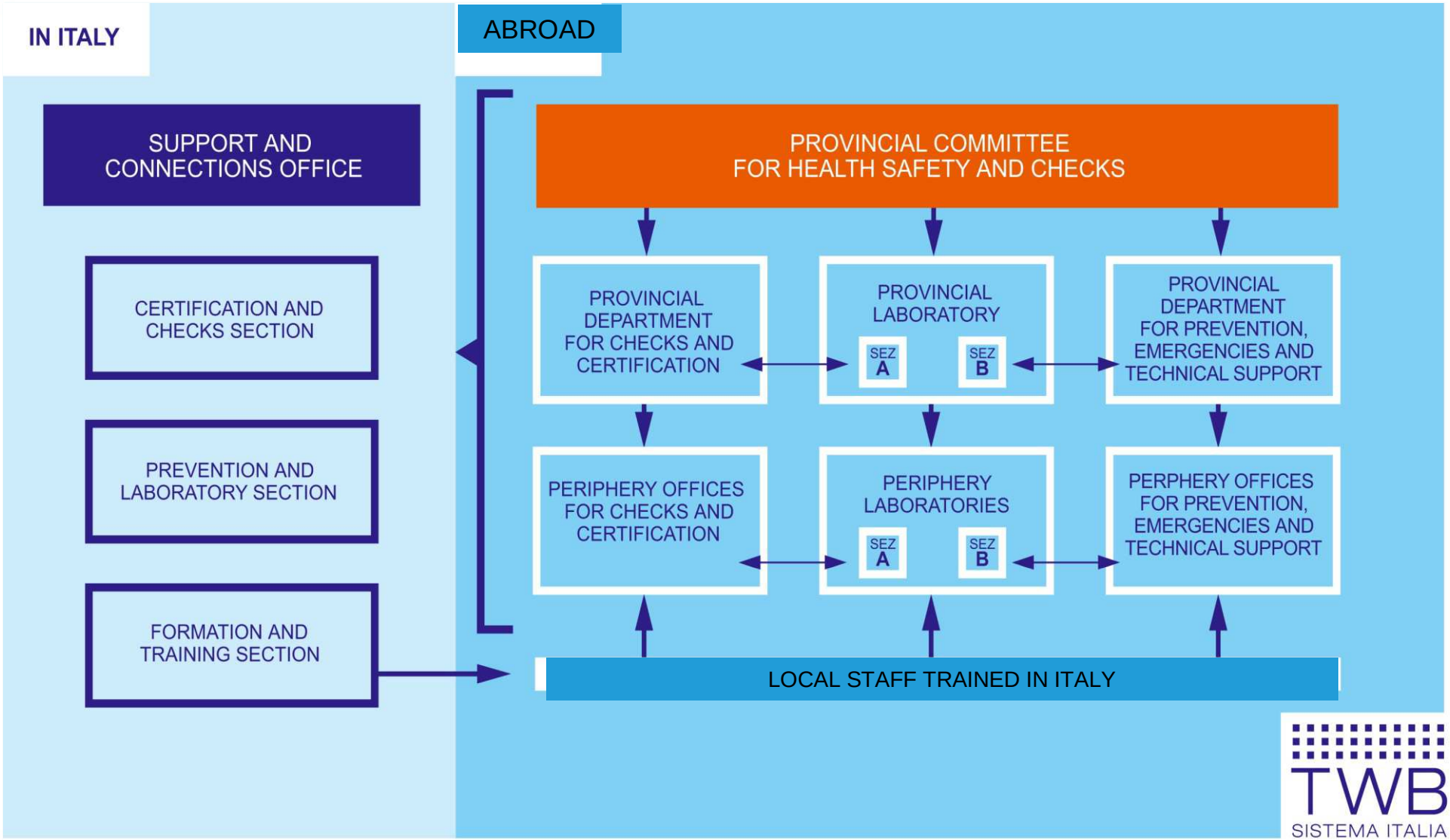
Organization System for quality and safety control



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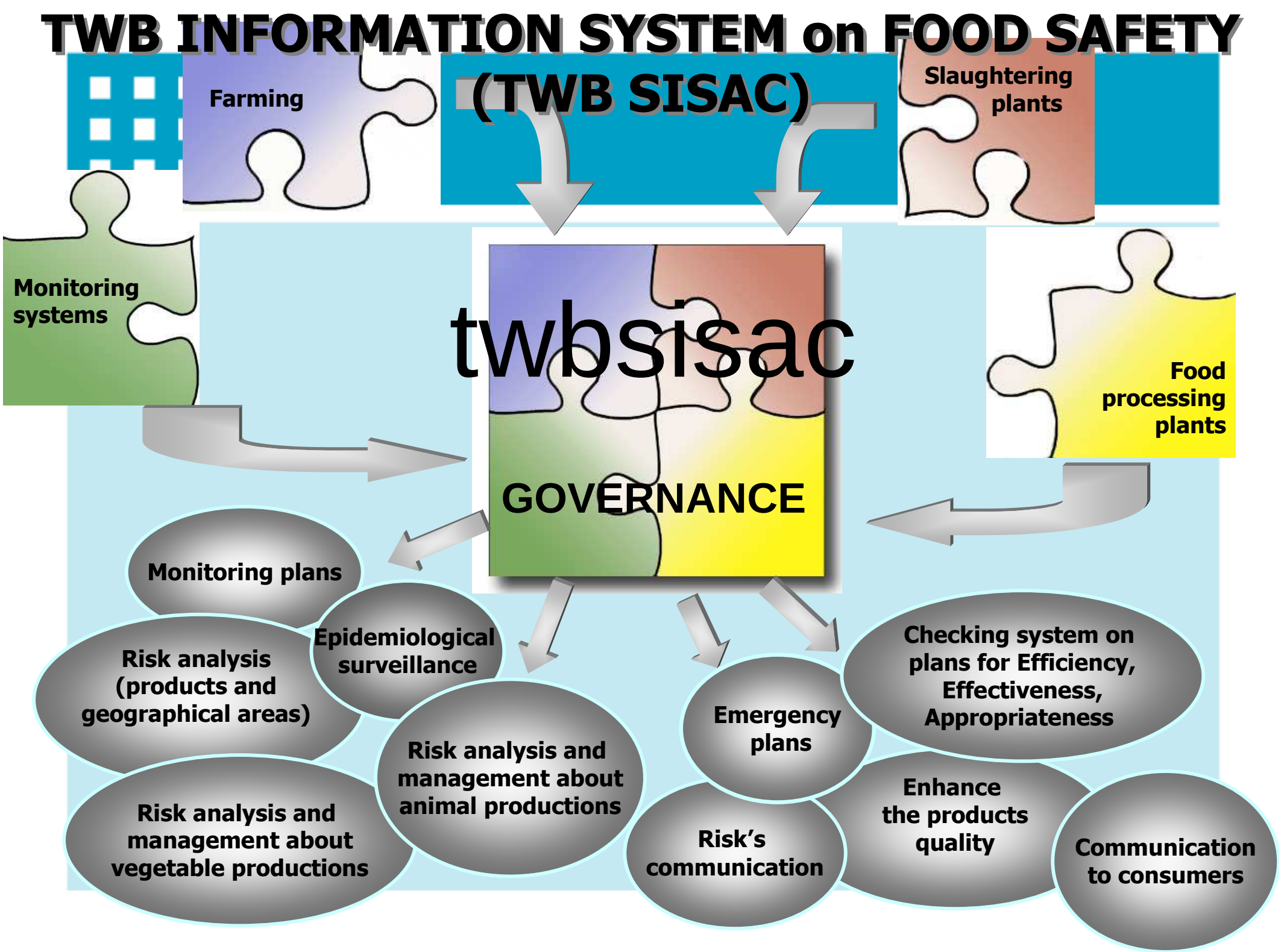
TWB INFORMATION SYSTEM on FOOD SAFETY
(TWB SISAC)
Farming
Slaughtering plants
Monitoring systems
twbsisac
Food processing plants
GOVERNANCE
Monitoring plans
Epidemiological surveillance
Risk analysis (products and geographical areas)
Risk analysis and management about animal productions
Risk analysis and management about vegetable productions
Emergency plans
Checking system on plans for Efficiency, Effectiveness, Appropriateness
Risk's communication
Enhance the products quality
Communication to consumers

Challenge for Agricultural Innovation

One of the bigger priority for development in the world is the protein augmentation, according to sanitary standards.

Animal proteins coming from pork meat are the most rapid to be produced and the safest.

This production has to be supported by a big plan for the technological innovation of the pigs production according to European standards for the rural sustainable development of breeders and farmers and for ensuring a high quality pork meat to consumers.

For supporting this challenge, which represents the biggest technological innovation in the history, it is needed technological Hubs, able to supply farmers and breeders with breeding and production techniques at the cutting hedge of knowledge.

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FARMING

Swine

Cattle

Sheep
Goats

Fish
culture

Aviculture

Seed

Slurry

Biogas

Energy

Wind

Solar

Sludge

Fertilizers

In field
production

Meat

Processes
- Meat
- Milk
- Egg
- fish
- Honey
- Fruit
- Vegetable

Apiculture

Plants
I-IV range

Feed-Fodder

SANITARY
GOVERNANCE

Marketing

The HUB ORGANIZATION AND DEPARTMENTS

The Headquarters of the **TWB Green Food-Tech Hub** will be laid out on a 100 hectare surface consisting of 8 departments + services:

Department I: Genetic Centre for the female TWB foundation lines (capacity: 2800 head).

Department II: Genetic Centre for the male TWB foundation lines (capacity: 1000 head).

Department III: Crops & vegetables technical nutrition Centre (plants nutrition, farming re-organization and new technical cultivations

Department IV: Training, information and communication Centre for technology transfer and diffusion in order to improve production.

Department V Centre for special feed and nutrition research and techniques and Centre for breeders' training:

Department VI: Animal Health Shield Centre, Centre for sanitary control and certification.

Department VII organic fertilizers production plant

Department VIII Centre for bio-energies

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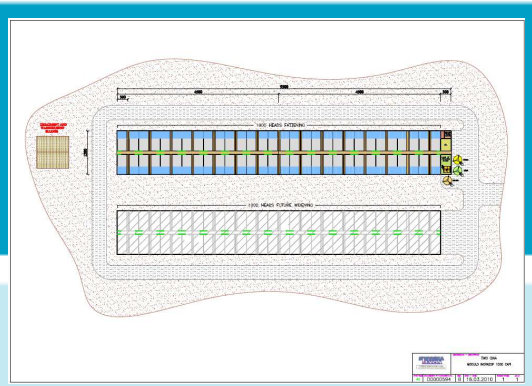

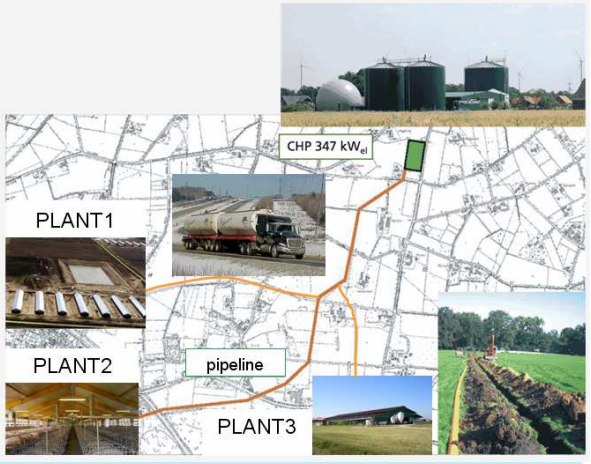

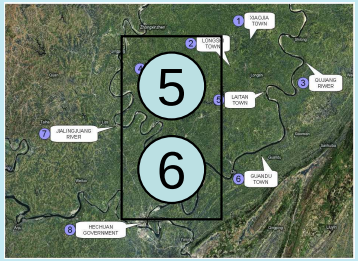

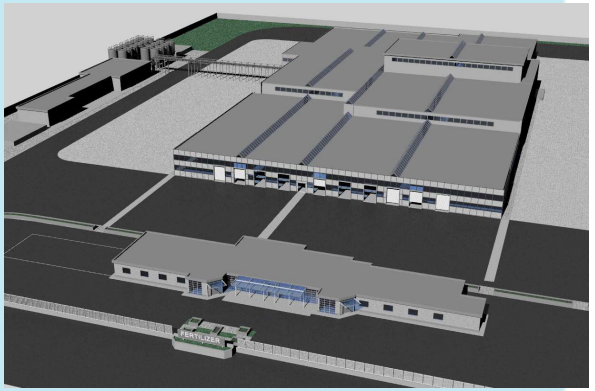

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3

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Slaughter 1

(250 head/h)

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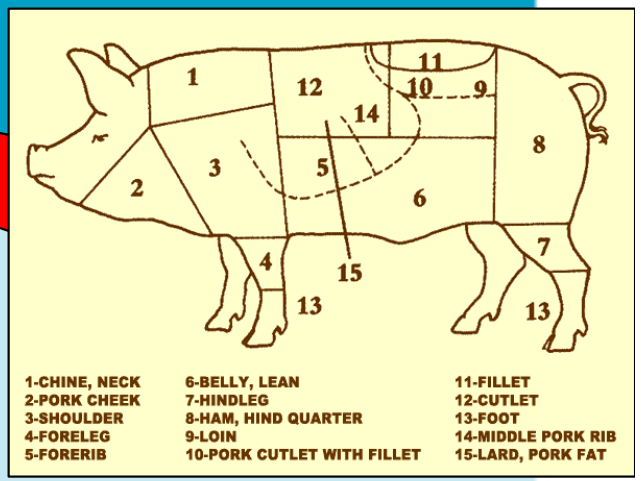
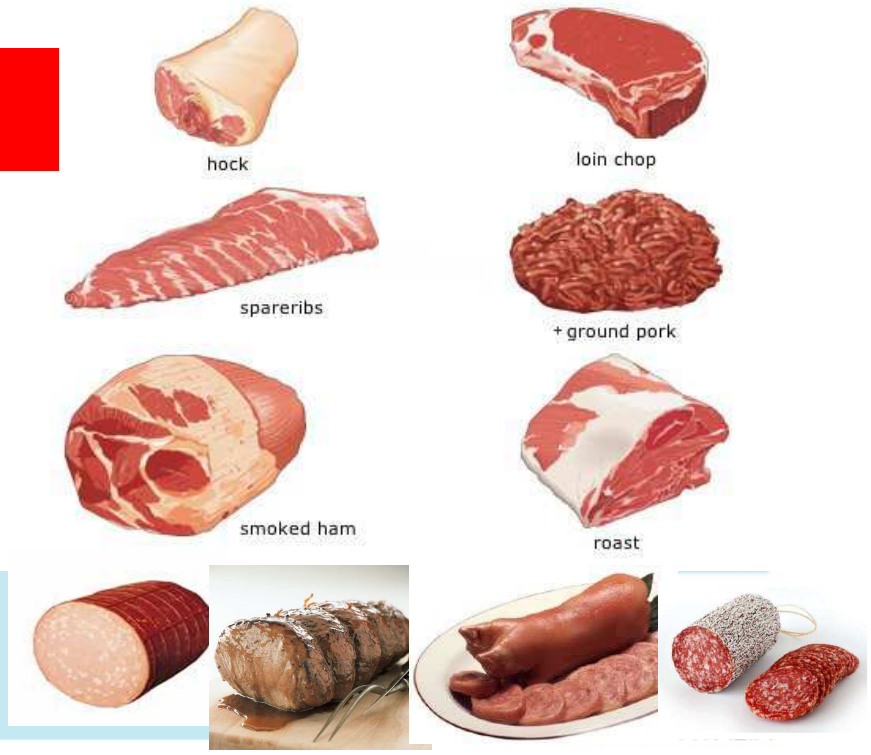


FOOD PROCESSING



The production

TWB Green Food-Tech Hub will be designed adopting high genetic quality and safety standards, according to European rules, and will be able to satisfy up to 5 different genetic typologies suitable for different areas, as follows:

Parental TWB females: 250.000 heads (produced by 10 franchising farms in 5 different areas) in order to assure an independent yearly production - made in the Country with TWB technology - of 1/1.500.000 ton of high quality, EU certified pork meat per year

Doses of semen: 5 million

Special premix & feed pre starter: 100.000 ton

Special sanitary and veterinary products: 20.000.000 units

Special organic fertilizers plant for crops and vegetables nutrition producing 100.000 ton per year.

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Environmentally Friendly TWB Green Food-Tech Hub

The hub will have no environmental impact. All the structures will be built with special energy-saving materials and the building roofs will be covered with photovoltaic panels.

Water will be recycled and all the centre waste will be recovered and transformed into bio-energy.

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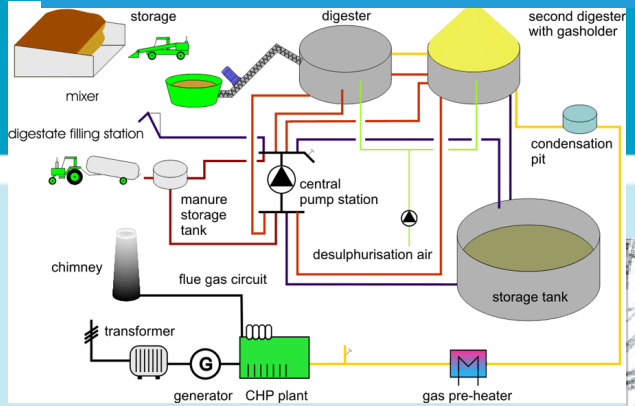
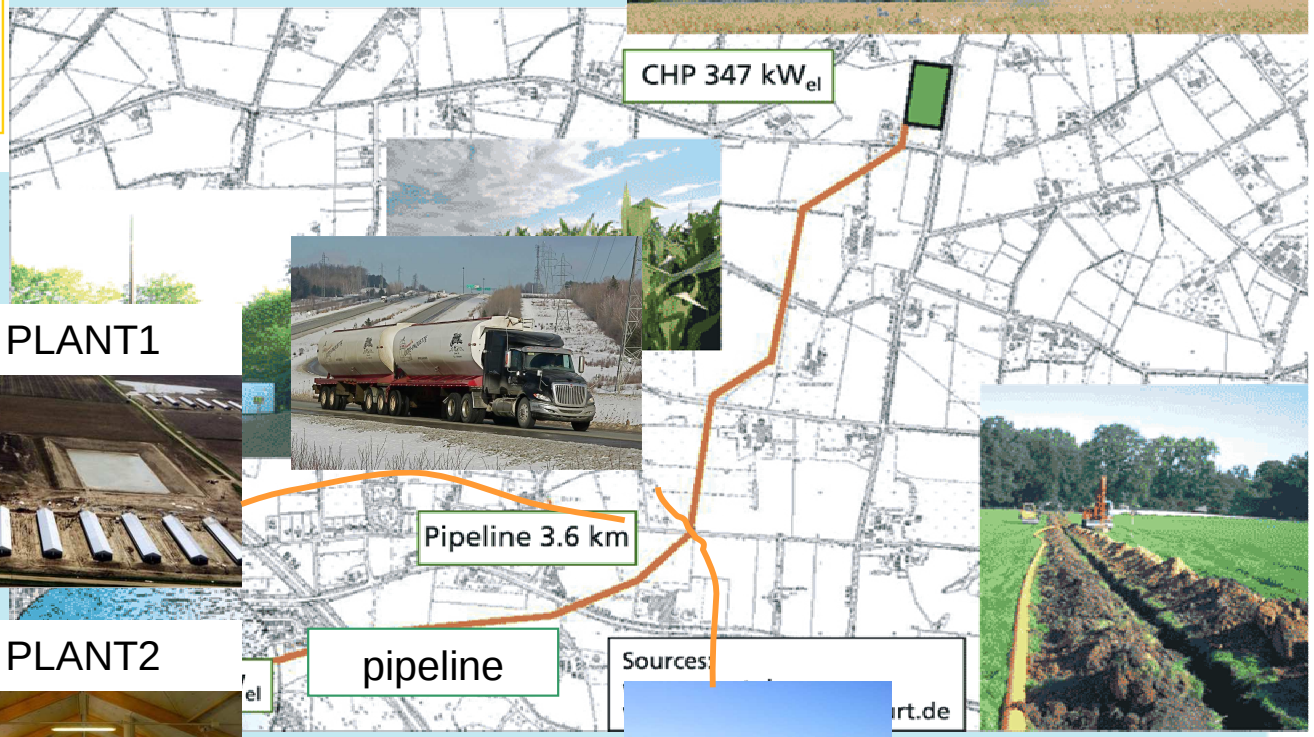
TWB GREEN TECH FOOD HUB





PLANT1

PLANT2

PLANT3

About every 50,000 heads there is a central biogas plant using the breeding wastes collected by pipelines or by transport after separation of solid from liquid.

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Investments and Social and economical advantages

A modular **TWB Green Food-Tech Hub** Unit costs 120 million euro and allows to produce 1,5 million ton of pork with the following advantages:

1. to provide a higher quality and 100% EU sanitary certified meat, with the possibility also to export **new pork meat with Italian trademark, GMO-free certification, total traceability and sanitary safety**;
2. to reduce imports by 10% (raw materials: soy beans, fish flour, etc.), thanks to a better productivity;
3. to set up 10.000 new high-tech breeding plants;
4. to set up an ecological, sanitary, agro-tech unit, conforming to international standards, on 500.000 hectares.
5. **to have a very short pay-back;**
6. **to save 150 million euro per year on the operating expenses;**
7. **to save 300 million euro in breeders' global investment;**
8. **to have an increased new global agricultural and meat production per year (140 million euro);**
9. **to have a high-tech, self-sufficient, zero impact production system.**

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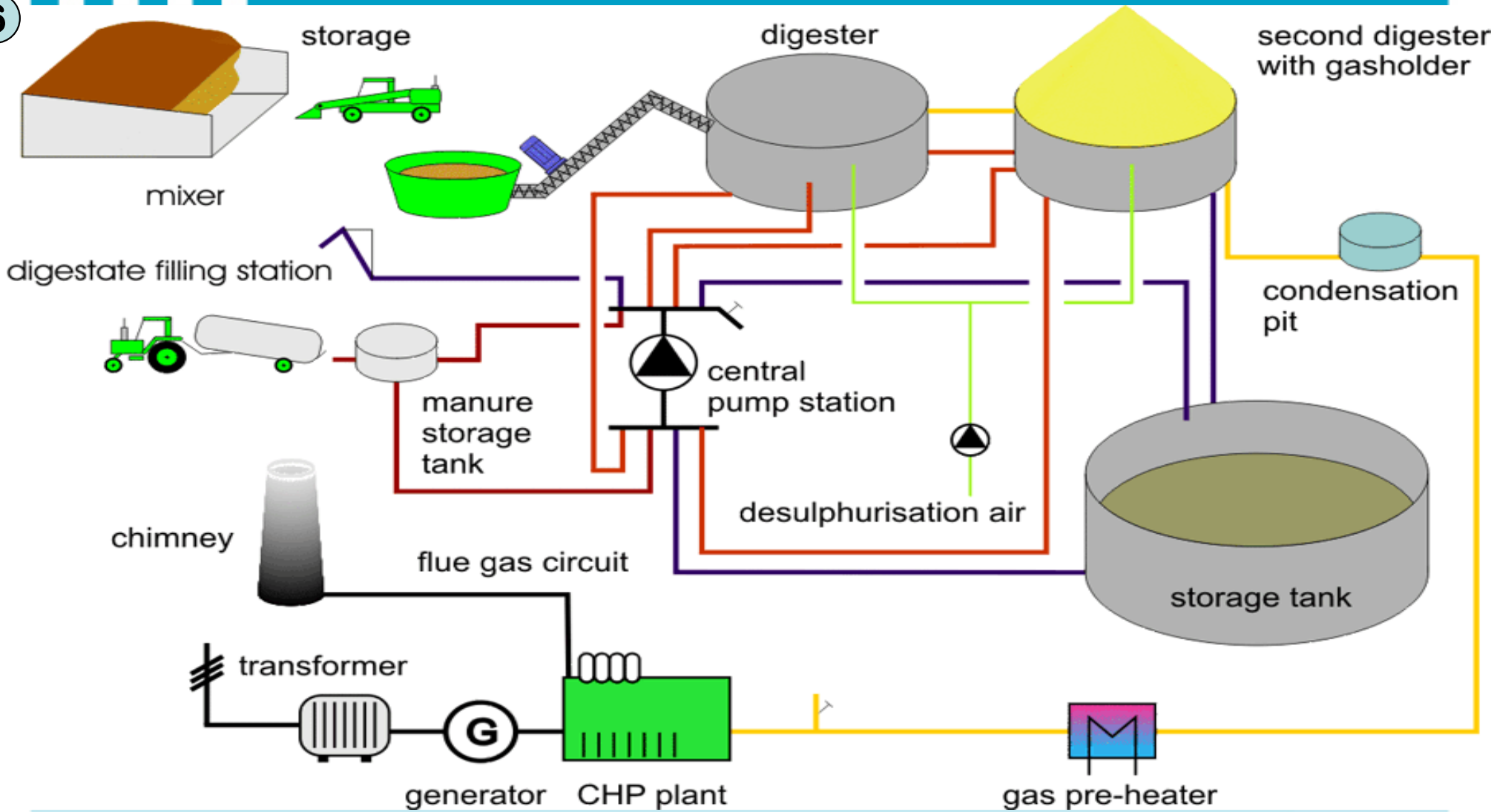

Simplified plant scheme producing biogas from animals liquid wastes

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SOME NUMBERS OF THE PROJECT

TYPE OF HEADS	UNITS PER MODULS	N° OF MODULS	TOTAL HEADS (PRESENTS)
GGP	1200	1+2	3.600
GP	2500	8	20.000
PARENTS	2500	100	250.000
WEANING PIGLETS	2500 (2)	1200	3.000.000
GROWING PIGS	5000 (1)	1000	5.000.000

(1) THE DIMENSION OF GROWING MODULS IS 1000 HEADS for 3 cycles/year
(2) THE DIMENSION OF WEANING MODULS IS 1000 HEADS for 4 cycles/year

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SOME OTHER NUMBERS

SITES	N° OF SITES	CAPACITY	UNIT
PREMIX, PRESTARTER PRODUCTION	1	120	TONS/h
FODDER PRODUCTION	10	100	TONS/h
SLAUGHTER HOUSES	9	250	HEADS/h
MEAT PROCESSING	6 (1)	100	TONS/8h
HEAD QUARTER	1		
GENERAL SERVICES	1		
LOGISTIC & TRANSPORTS (INCLUDING FRIGO TRUCKS)	2		

(1) FRESH & COOKED MEAT, STORAGES AND SALAMI PRODUCTION

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OTHERS SERVICES TO IMPLEMENT IN THE HUB

- LABORATORIES
- RESEARCH CENTER
- TRAINING CENTERS
- MONITORING AND CONTROL CENTERS
- WASTES TREATMENT CENTERS
- MAINTENANCE CENTERS
- VETERINARY DRUGS PRODUCTION CENTER
- TRANSPORTS MANAGEMENT CENTERS
- RESTAURANTS FOR SAMPLING-TASTING
- ECOFERTILIZERS PRODUCTION CENTERS
- GUEST QUARTERS - HOTELS
- ADVERTISING SYSTEM
- WEB SITE
- COMPUTER MANAGEMENT SYSTEM
- HEALTHCARE INFORMATION SYSTEM
- OTHERS

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TECHNICAL BREEDING MAIN GUIDELINES

STANDARD BREEDING MODUL 2500 HEADS

MANAGEMENT OPTIMIZATION
SANITARY CONTROL
ECONOMICAL OPTIMIZATION
LOWER ENVIRONMENTAL IMPACT

OPEN CYCLE

INCREASING SANITARY WARRANTIES
EVERY PRODUCTION PHASE OPTIMIZATION
PEOPLE TRAINING OPTIMIZATION
PEOPLE TRAINING SPECIALIZATION

LOWEST ENVIRONMENTAL IMPACT

WASTE RECOVER MATERIALS (ENERGY, FERTILIZERS, WATER.....)
RENEWABLE ENERGIES USE: FROM WASTES, SOLAR,
PHOTOVOLTAIC, GEOTHERMAL...)

BREEDING WASTE TREATMENT SOWS SITE

THREE CASES STUDY

INPUT DATA CASE STUDY 1:

- **WASTES COMING FROM 5000 SOWS SITE – 25.550 cm/y**
- **SLAUGHTERHOUSE WASTES – 365 tons/year**

INPUT DATA CASE STUDY 2:

- **WASTES COMING FROM 5000 SOWS SITE – 25.550 cm/day**
- **SLAUGHTERHOUSE WASTES – 1.825 tons/day**

INPUT DATA CASE STUDY 1:

- **WASTES COMING FROM 5000 SOWS SITE – 25.550 cm/day**
- **SLAUGHTERHOUSE WASTES – 3650 tons/day**

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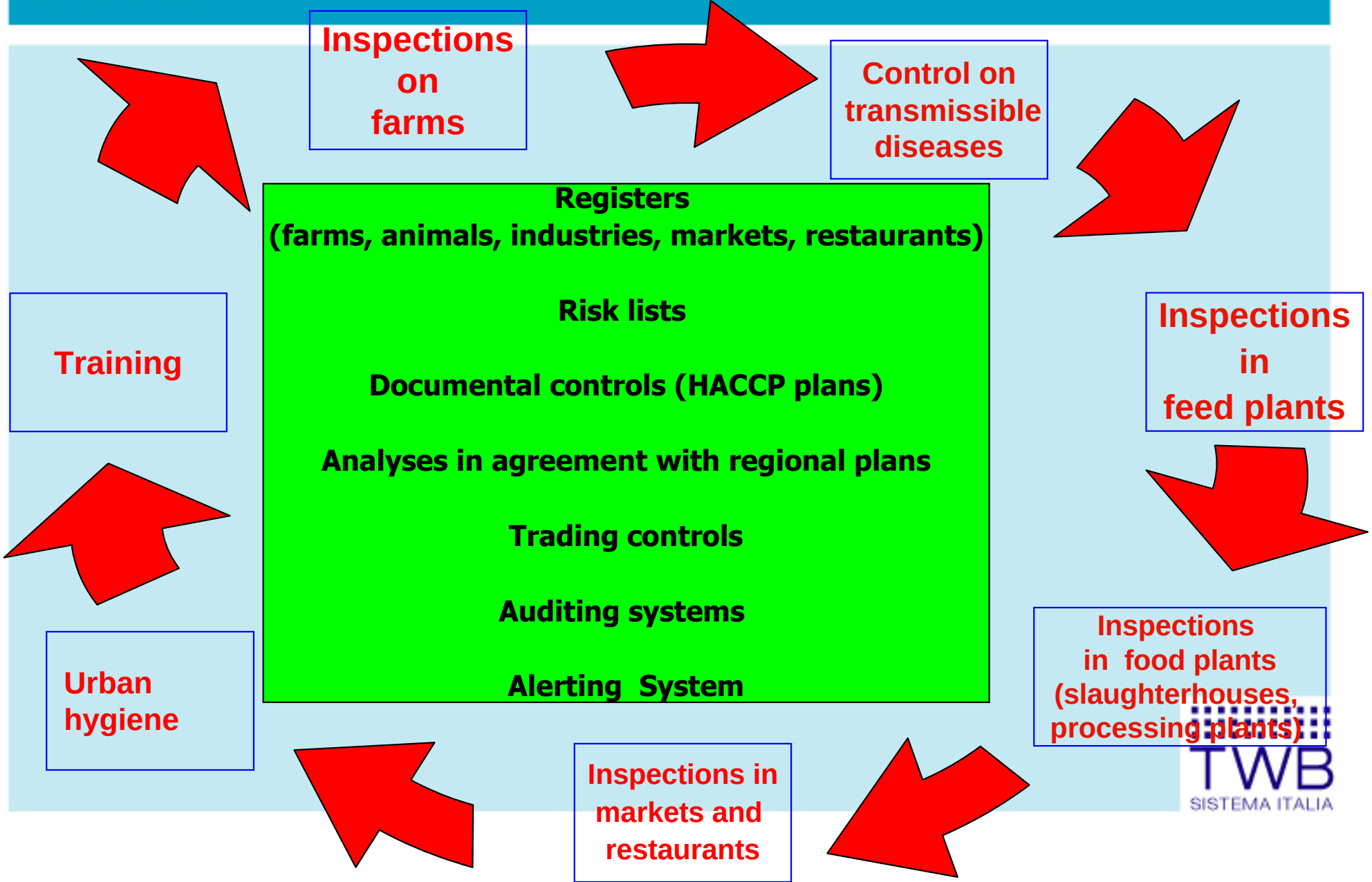
Elaboration and implementation of a shared and structured Public Health organization along the food production chain

"from the field to the table"*

based on the Tuscany Region Model

****According with the European Union Legislation***
****According with the new local "Food Law"***

Functions of Each Local Health Unit



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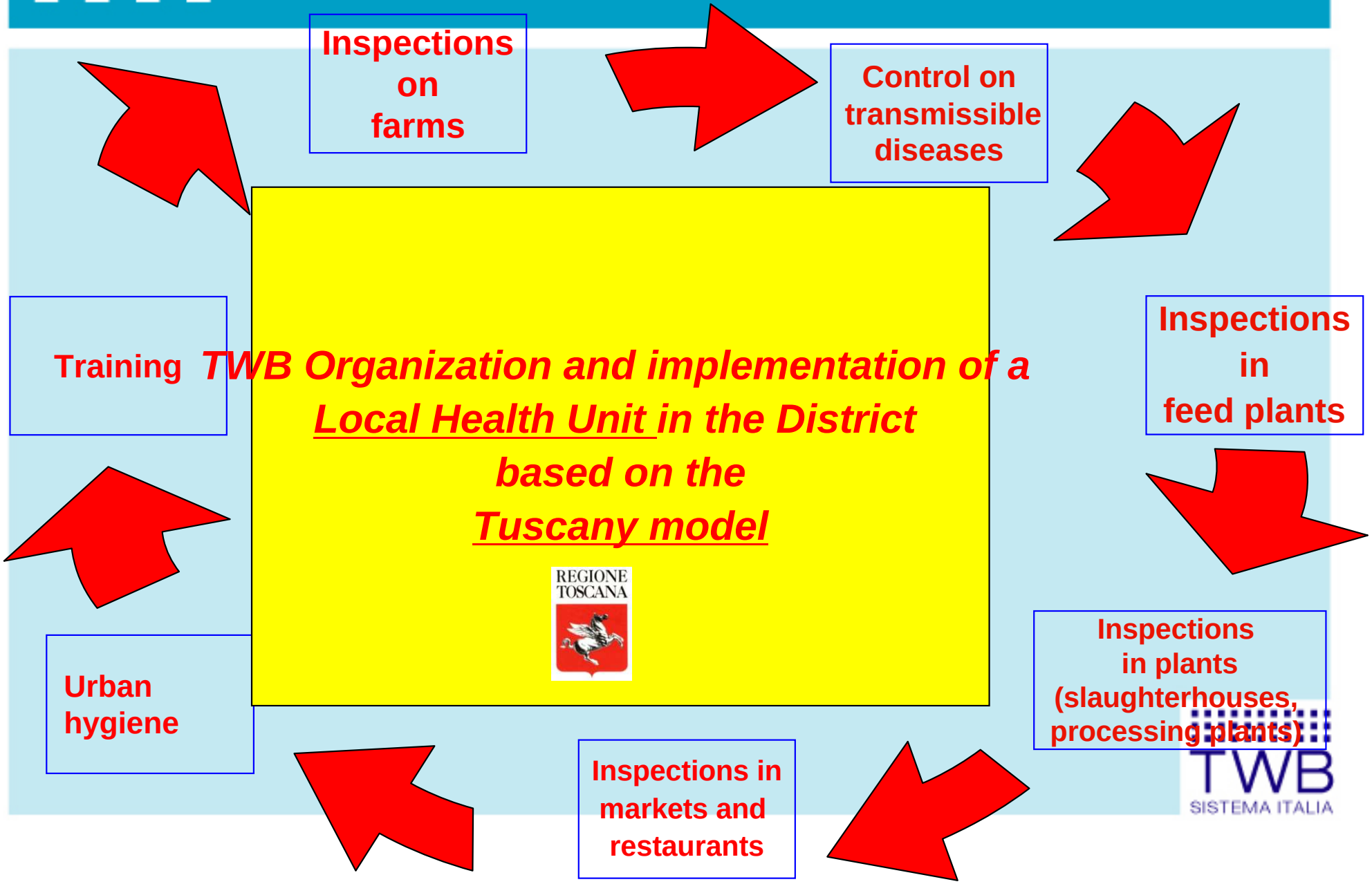

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3D VIEW

TWB GREEN TECH FOOD HUB

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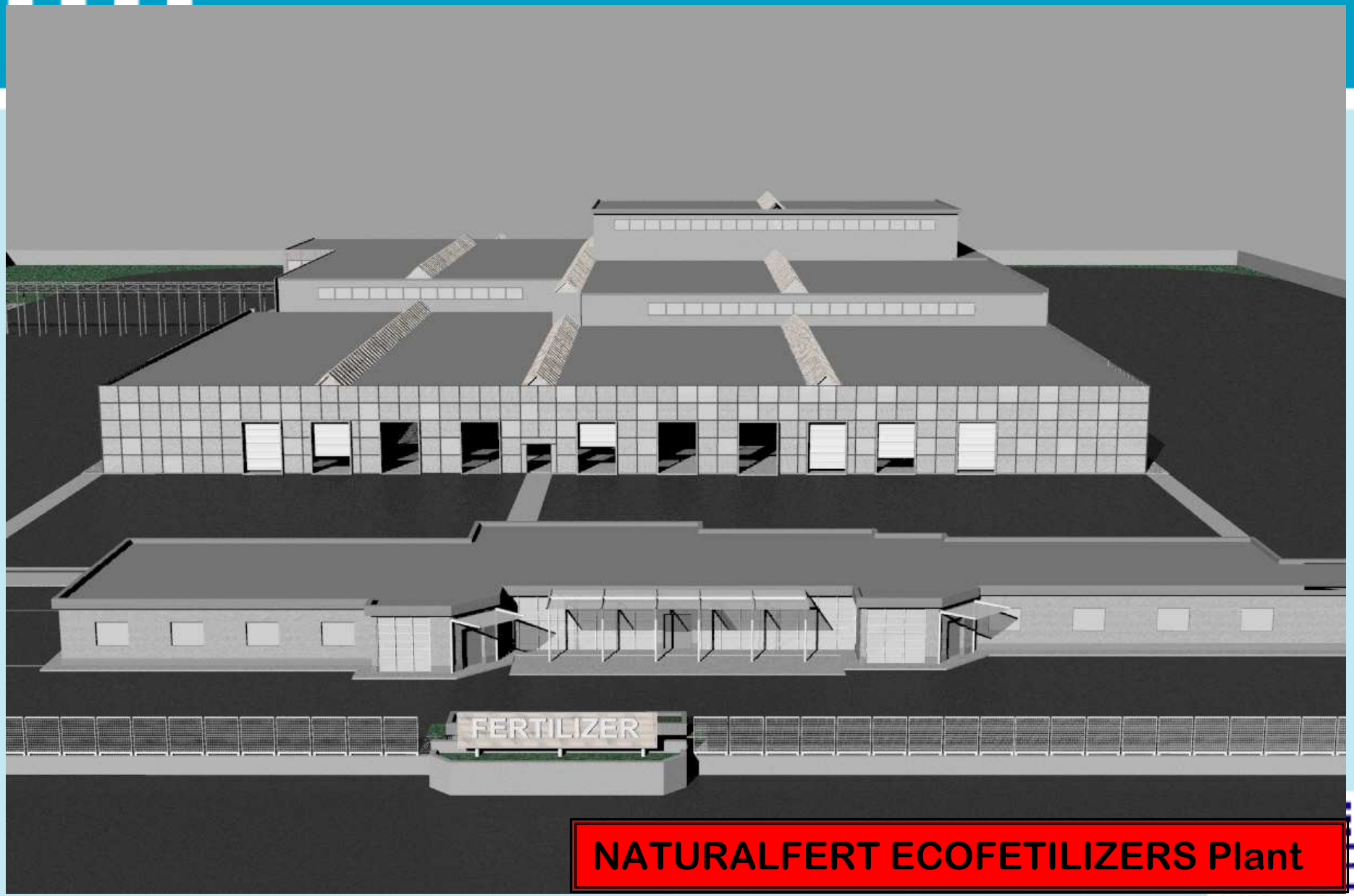

NATURALFERT ECOFETILIZERS Plant

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Advantages

TWB System is able to provide different areas:

with a technological-scientific centre for the production of genetic nutrition system TWB typologies, suitable for the specific climatic and natural conditions of different regions with a considerable reduction of costs;

with a diffusion and technology transfer training centre for the application of new breeding, nutritional, and health control technologies aimed at achieving Food-Safety and Food-Quality;

with a genetic production in order to satisfy consumers' new needs. Moreover, being very resistant against diseases, the production will be a strategic stock in case of epidemics or international crisis;

with new pork production plants equipped with systems and technologies for environmental protection and renewable energy sources (biogas, bio-diesel, biomass, etc.).

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General Goals and other advantages

Greater quality in food results
in better **health**, **customer satisfaction**,
and **improved living conditions**.

Greater **international integration** ensures more economic, social, and cultural developments.

Sustainable agricultural production fosters an increase in the land's value , earning power and prevents rural population from abandoning the countryside, migrating to bigger cities.

Increased general employment, both directly and indirectly generated (logistics, transport, bio-energies, agricultural mechanization, etc.).

Promotion of the national image and identity
(emphasis on tradition, technological
and entrepreneurial progress, etc.).

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PRELIMINARY TIMING

The preliminary timing estimation of the hub construction is as follows:

Design: 5-7 months

Construction: 18-24 months

Commissioning: 3 months

Some phases can be overlapped, so the total timing of the project construction can be estimated in about 28-30 months.

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Italian technologies and management

The Italian Party TWB Italia will contribute with technicians, managers and know-how in order to support the Party in setting up and running the TWB Green Tech Food HUB according to European rules concerning sanitary safety, controls and certifications systems.

TWB Italia is available to sign a technical cooperation agreement for the start-up and for running the Hub during the first 3 years.

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TWB GREEN TECH HUB FOR FOOD SECURITY