

Ten Steps To Zero Waste

Paul Connett, PhD

Professor Emeritus of Environmental Chemistry

St. Lawrence University, Canton, NY

Director AEHSP,

AmericanHealthStudies.org

pconnett@gmail.com

San Sebastian, May 12, 2012

EUROPA ZERO ZABOR

zero ez bada... zenbat?



Urteko
biltzarra

maiatzak
11 - 13



“Even if we made incineration safe we would never make it sensible. It simply does not make sense to spend so much money destroying resources we should be sharing with the future.” (PC)





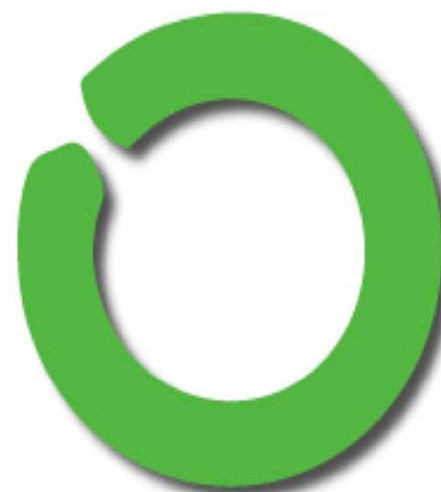
PAUL CONNETT

con Rossano Ercolini e Patrizia Lo Sciuto

RIFIUTI ZERO

una rivoluzione in corso

introduzione di Tommaso Sodano



TEN STEPS To ZERO WASTE

**Source
Separation**

**Door to Door
Collection**

Composting

Recycling

**Reuse, Repair
& Community
Center**

**Waste
Reduction
Initiatives**

**Economic
Incentives**

**Residual
Separation &
Research
Center**

**Better
Industrial
Design**

Temporary Landfill

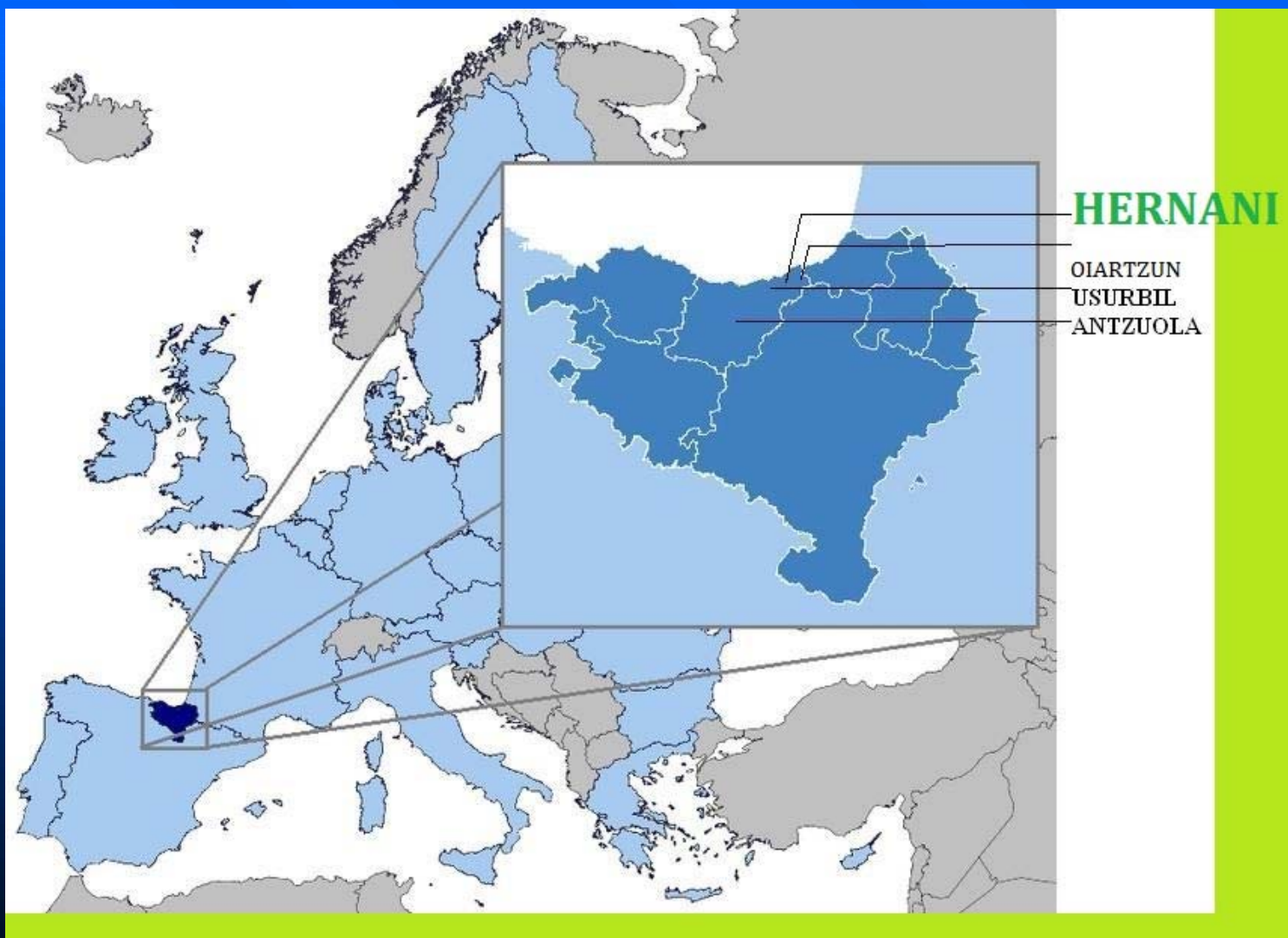
2020

- 1) Source Separation and
- 2) Door-to-Door collection



The San Francisco system

Hernani en Europa





HORARIO Y CALENDARIO DE RECOGIDA

	lunes	martes	miércoles	jueves	viernes	sábado	domingo
9:00					rechazo		
23:00	envases ligeros	papel- cartón	orgánico	envases ligeros	orgánico	rechazo	orgánico



Calidad del compost



Pureza del 99,76 %

3) Composting



4) Recycling



5) Reuse, Repair & Deconstruction

In Berkeley, California
(URBAN ORE)









- **Urban Ore, Berkeley, California operating for 30 years**

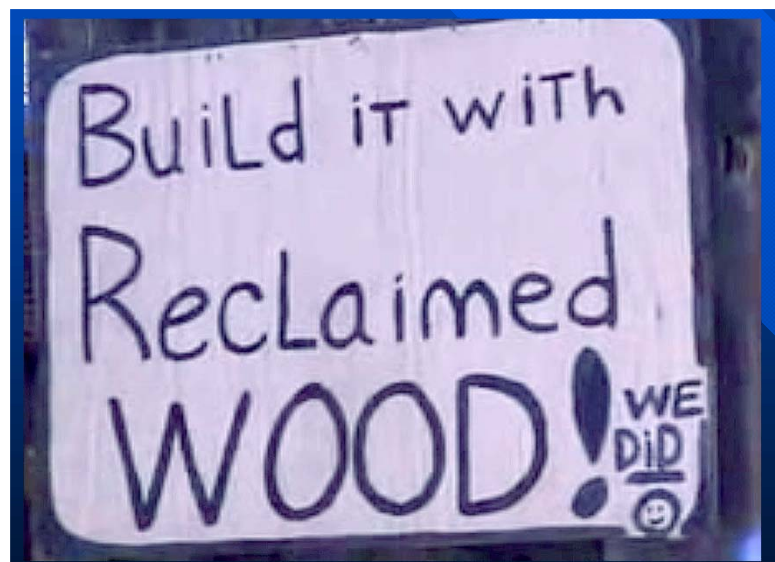
- **Grossing \$3 million per year**
- **27 full-time well-paid jobs**

5) Reuse, Repair & Deconstruction

**In Burlington, Vermont
(RECYCLE NORTH)**







6) Waste reduction initiatives

- The Irsih government put a 15 cent tax on plastic shopping bags
- reduced use by 92% in one year!

Italy

- Several supermarket chains are providing dispensers which allow customers to refill **shampoo** and **detergent** bottles...
- As well as **wine, water** and **milk**

Effecorta, a food store in Capannori, Tuscany, has 60 taps for liquids for refillable containers





REFILL SYSTEM FOR DETERGENTS

OLIVE OIL



TAP WATER INSTEAD OF BOTTLED WATER



**GLASS INSTEAD OF
PLASTIC BOTTLES**

REUSABLE PAMPERS

ecobimbi
Pannolino Ecologico Lavabile



7. Economic Incentives

"Pay as you throw" system



free



free



The more
you make,
the more
you pay!

Step 8.

Step 8 is the most important step
to get close to Zero Waste

The background is a solid blue gradient, transitioning from a lighter blue at the top to a darker blue at the bottom. Overlaid on this are several diagonal stripes of varying shades of blue, creating a sense of depth and movement.

Step 8 completely avoids
incineration

Step 8 makes the residual
fraction very visible

8. Residual Separation & Research Facility

RESIDUAL SEPARATION & RESEARCH FACILITY

- 1. Built at entrance to landfill
- 2. No material can enter landfill without it being separated and screened
- 3. More material recycled
- 4. Toxics removed and identified
- 5. Dirty organics biologically stabilized
- 6. Non-recyclable materials STUDIED

RESIDUAL SCREENING FACILITY



```
graph TD; A[RESIDUAL SCREENING FACILITY] --> B[DIRTY ORGANIC FRACTION]; A --> C[MORE RECYCLABLES]; A --> D[MORE TOXICS]; B --> E[BIOLOGICAL STABILIZATION]; E --> F[INTERIM LANDFILL for non-recyclable and stabilized organic fraction];
```

The diagram illustrates the process of a Residual Screening Facility. It starts with a box labeled 'RESIDUAL SCREENING FACILITY' at the top. A large orange arrow points down from this box to a horizontal grey bar. From this bar, three orange arrows point down to three separate boxes: 'MORE RECYCLABLES' (dark blue), 'MORE TOXICS' (dark blue), and 'DIRTY ORGANIC FRACTION' (pink). The 'DIRTY ORGANIC FRACTION' box has an orange arrow pointing down to a light blue box labeled 'BIOLOGICAL STABILIZATION'. Finally, an orange arrow points down from the 'BIOLOGICAL STABILIZATION' box to a red box at the bottom labeled 'INTERIM LANDFILL for non-recyclable and stabilized organic fraction'. A large purple box with white text is positioned in the lower-left area of the diagram.

MORE
RECYCLABLES

MORE TOXICS

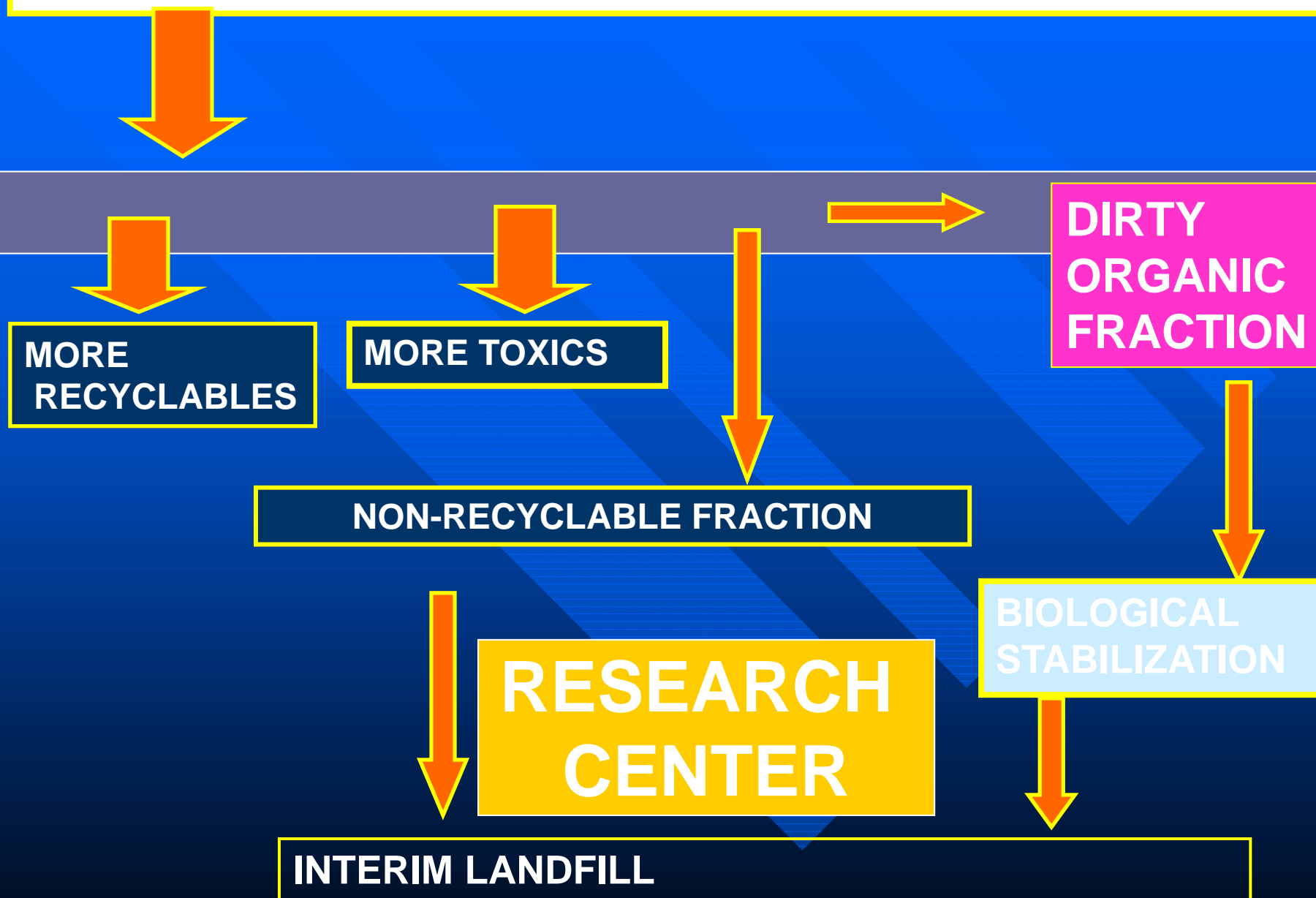
DIRTY
ORGANIC
FRACTION

This type of facility is
currently running in NOVA
SCOTIA, Canada

BIOLOGICAL
STABILIZATION

INTERIM LANDFILL for non-recyclable and stabilized organic fraction

RESIDUAL SCREENING & RESEARCH FACILITY



NON-RECYCABLE MATERIALS

**Local
University**

**Or
Technical College**

**ZERO WASTE
RESEARCH CENTER**

The Message to Industry:

- If we can't reuse it, recycle it or compost it,
- Industry shouldn't be making it
- We need better industrial design for the 21st Century

9. Better Industrial Design

10. An interim landfill for
biologically stabilized
dirty organic fraction and
non-recyclable fraction

**Source
Separation**

**Door to Door
Collection**

Composting

Recycling

**Reuse, Repair
& Community
Center**

**Waste
Reduction
Initiatives**

**Economic
Incentives**

**Residual
Separation &
Research
Center**

**Better
Industrial
Design**

Temporary Landfill

2020

San Francisco

- Population = 850,000
- Very little space
- **78% waste diverted by 2011**
- **ZERO WASTE by 2020 (or very close!)**

Italy

- Over 200 communities achieving over 70% diversion-
- and some very quickly

Italy

- **Novara** - (a city near Turin, population = 100,000) achieved 70% diversion in just 18 months!

Italy

- **Salerno** (near Naples, pop 145,000)
18% to 72% **in one year!**

Italy

- Villafranco d'Asti
(Piedmont, population =
3,000) has reached 85%
diversion

Spain

- Usurbil in Basque Country
- Has gone from 28% to 86% in 7 months

ZERO WASTE
IS A
NEW
DIRECTION

The background of the slide is a blue gradient that transitions from a lighter blue at the top to a darker blue at the bottom. Overlaid on this gradient are several diagonal stripes in a slightly darker shade of blue, running from the top-left towards the bottom-right. On the left side of the slide, there is a solid orange rectangular box.

THE BACK END OF WASTE DISPOSAL

**THE
BACK END
OF
WASTE
DISPOSAL**



**THE
FRONT END
OF
INDUSTRIAL
DESIGN**

**Source
Separation**

**Door to Door
Collection**

Composting

Recycling

**Reuse, Repair
& Community
Center**

**Waste
Reduction
Initiatives**

**Economic
Incentives**

**Residual
Separation &
Research
Center**

**Better
Industrial
Design**

Temporary Landfill

2020



Conclusions

- We do not need mega-landfills or incinerators!
- There is a better alternative
- The ZERO WASTE strategy is
- Better for our health (LESS TOXICS)
- Better for the economy (MORE JOBS),
- Better for our children (MORE HOPE), and
- Better for the planet (MORE SUSTAINABLE)!



Better
Industrial
Design

Sustainable
Agriculture

Education
For
Sustainability

Sustainable
Architecture

Sustainable
industries
& Jobs

Rifiuti Zero
2020

Sustainable
Energy

Sustainable
Community
development

Sustainable
Economic
development



Composting

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

**Sustainable
Architecture**

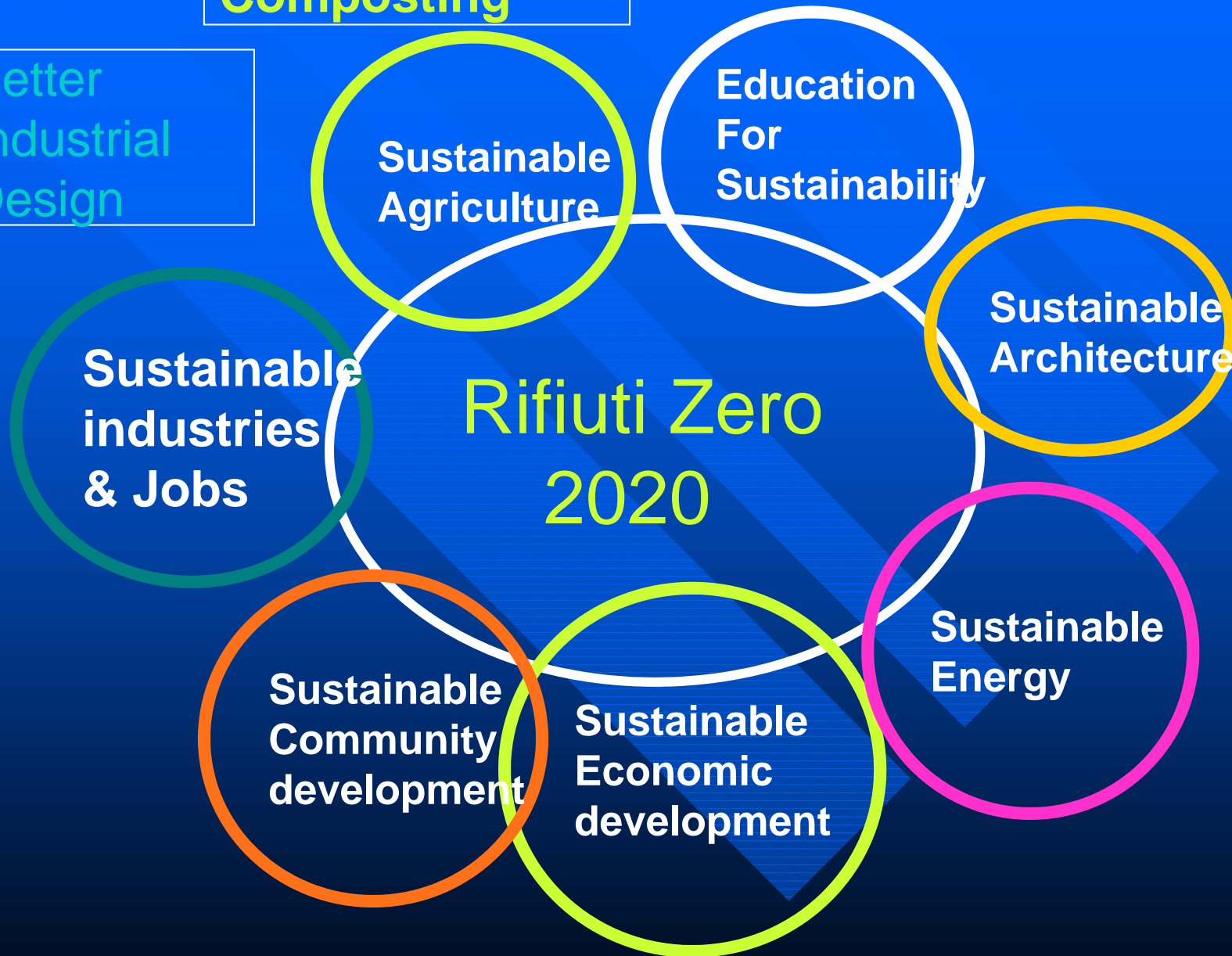
**Sustainable
industries
& Jobs**

**Rifiuti Zero
2020**

**Sustainable
Energy**

**Sustainable
Economic
development**

**Sustainable
Community
development**



Research Center

Composting

Better
Industrial
Design

Education
For
Sustainability

Sustainable
Agriculture

Sustainable
Architecture

Sustainable
industries
& Jobs

Rifiuti Zero
2020

Sustainable
Energy

Sustainable
Community
development

Sustainable
Economic
development



Composting

Research Center

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

Deconstruction

**Sustainable
Architecture**

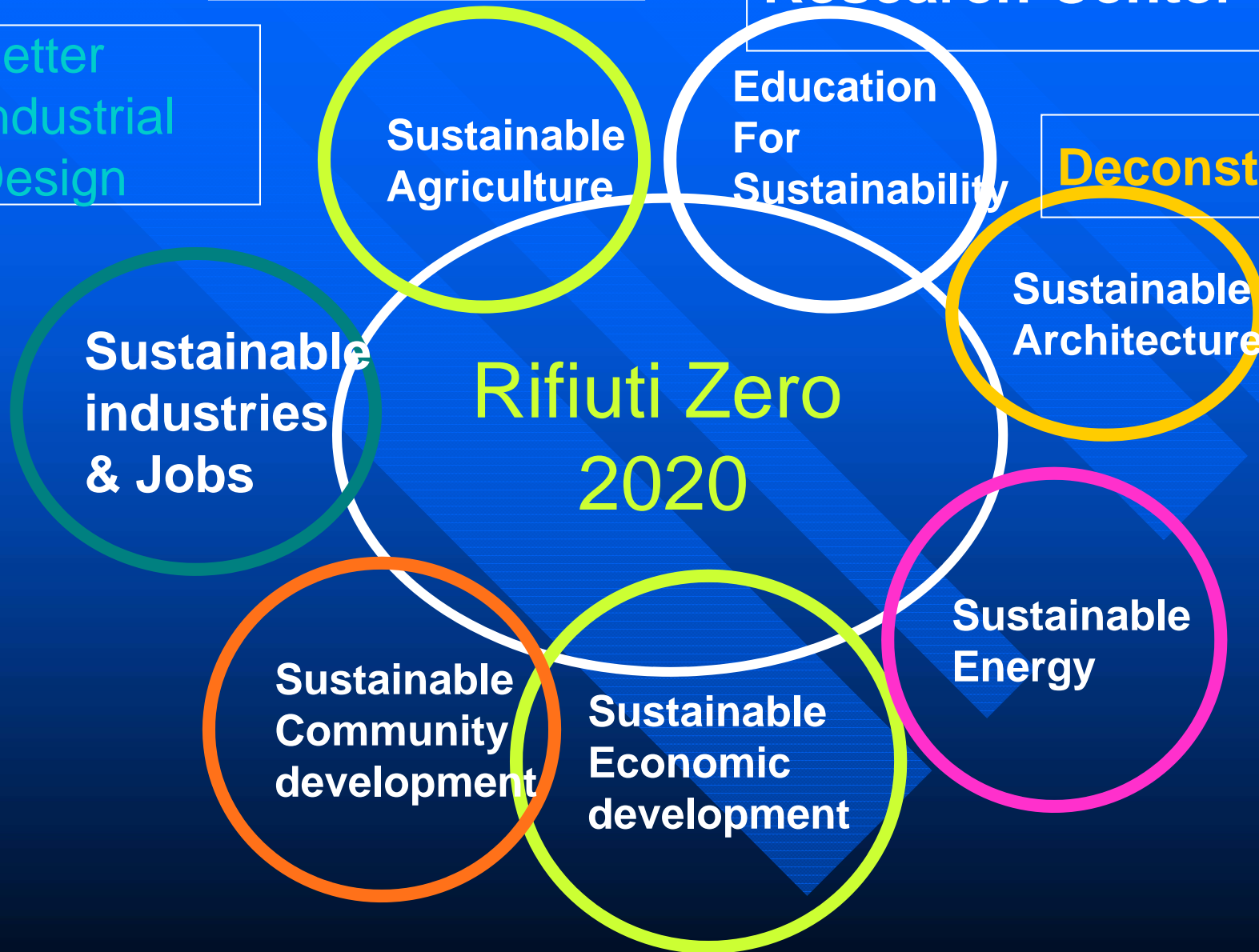
**Sustainable
industries
& Jobs**

**Rifiuti Zero
2020**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**



Composting

Research Center

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

Deconstruction

**Sustainable
Architecture**

**Sustainable
industries
& Jobs**

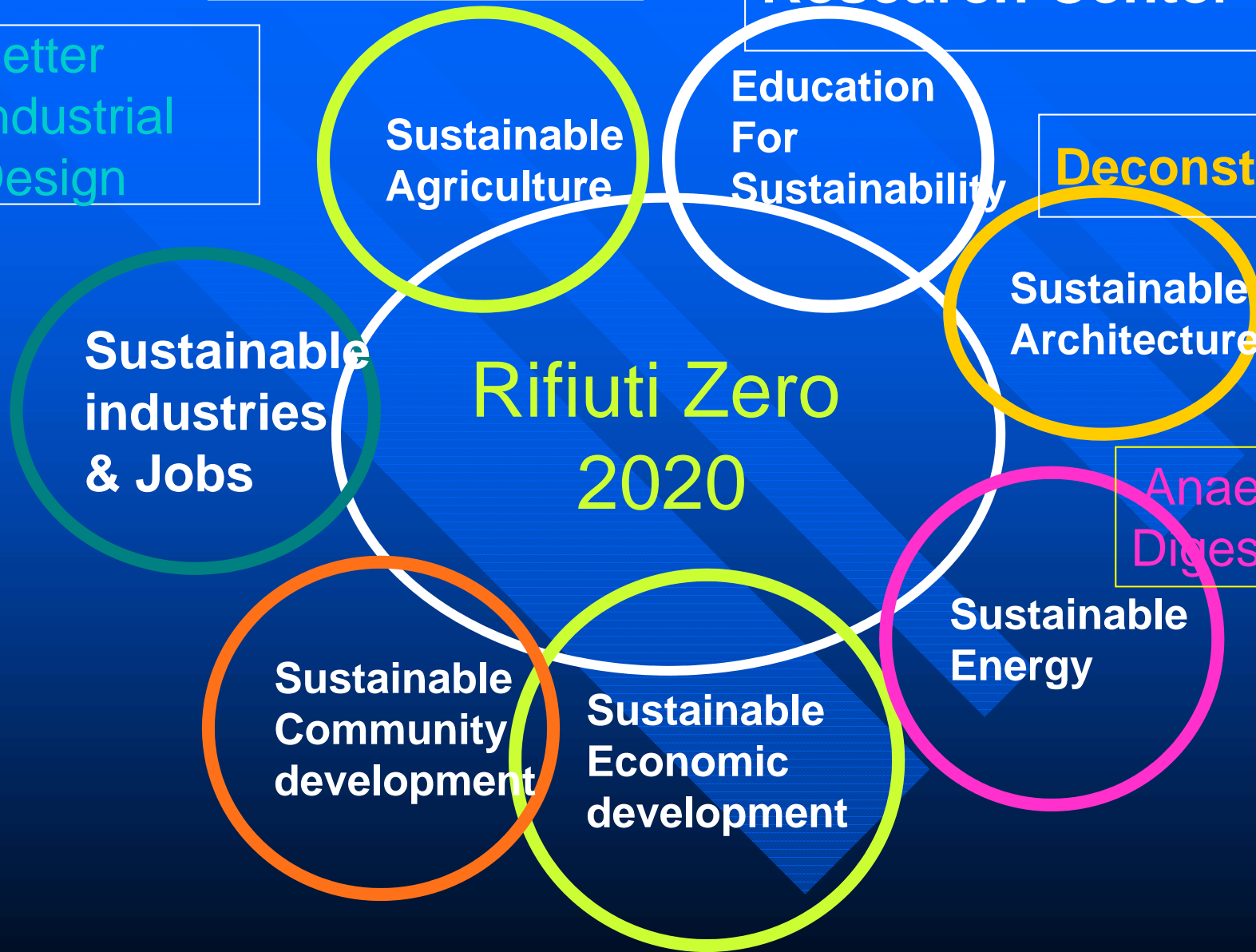
**Rifiuti Zero
2020**

**Anaerobic
Digestion**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**



Composting

Research Center

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

Deconstruction

**Sustainable
Architecture**

**Sustainable
industries
& Jobs**

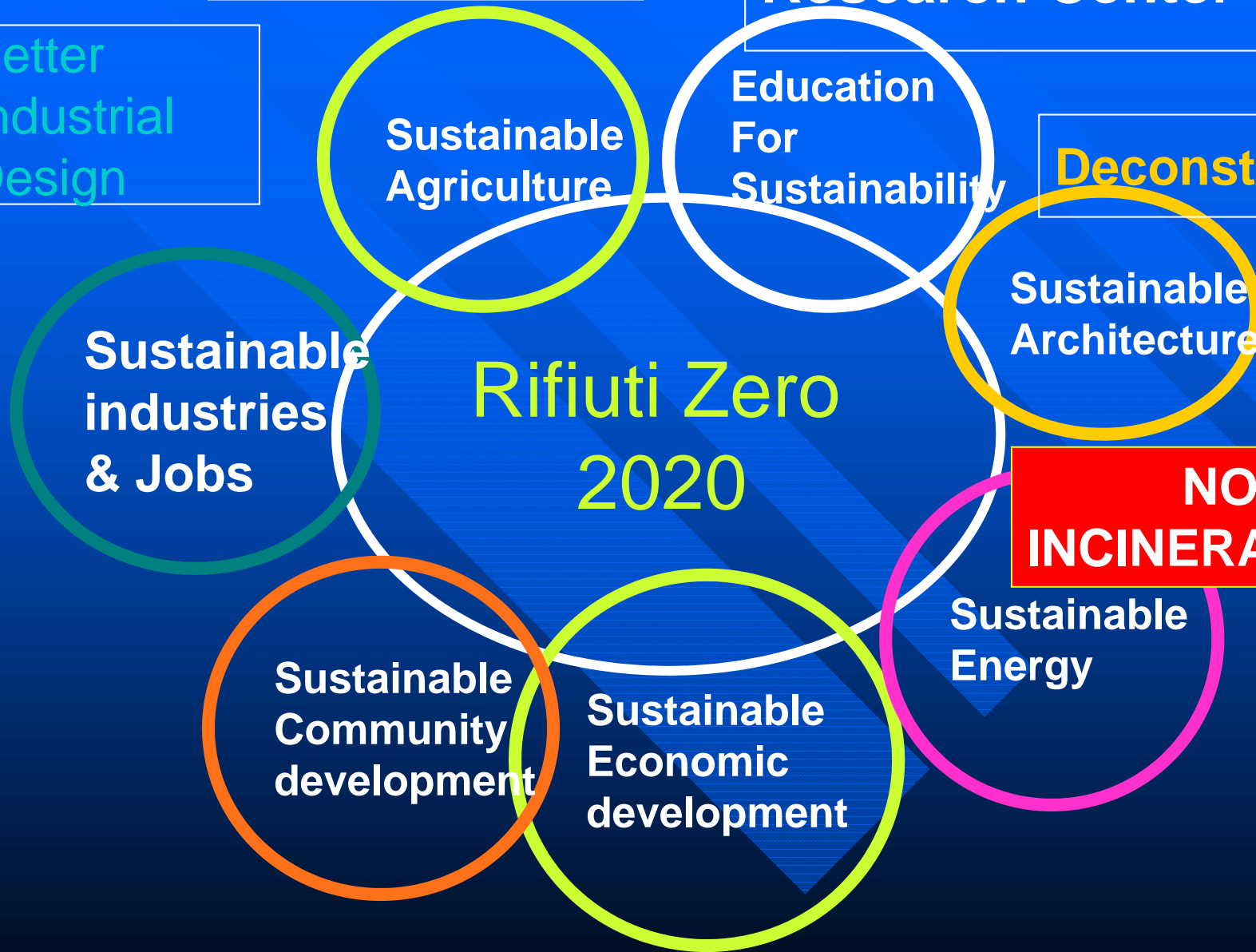
**Rifiuti Zero
2020**

**NO
INCINERATION**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**



Composting

Research Center

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

Deconstruction

**Sustainable
Architecture**

**Sustainable
industries
& Jobs**

**Rifiuti Zero
2020**

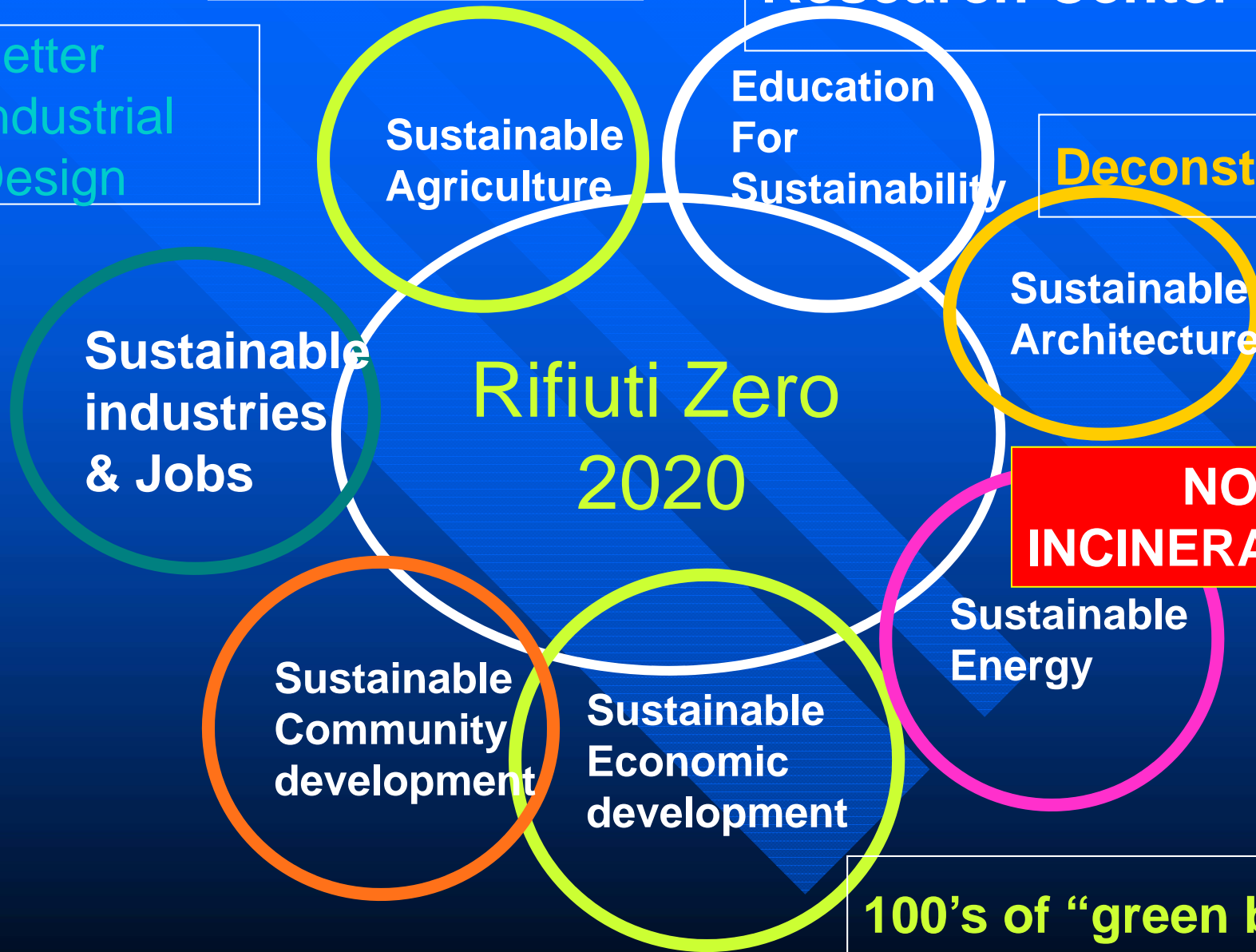
**NO
INCINERATION**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**

100's of "green boxes"



Composting

Research Center

**Better
Industrial
Design**

**Sustainable
Agriculture**

**Education
For
Sustainability**

Deconstruction

**Sustainable
Architecture**

**Sustainable
industries
& Jobs**

**Rifiuti Zero
2020**

**NO
INCINERATION**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**

**Reuse &
Repair
Centers**

100's of "green boxes"