

# **6. Waste Reduction Initiatives**

# Ireland

# Ireland

- Government put a 15 cent tax on plastic shopping bags

# Ireland

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

# Italy

Italy

In time collection of food  
from supermarkets and  
restaurants

Italy

In time collection of food  
from supermarkets and  
restaurants

Prof. Andrea Segre

Agriculture Dept.,

U. of Bologna

[andrasegre@unibo.it](mailto:andrasegre@unibo.it)

# Italy

- Several supermarket chains are providing dispensers which allow customers to refill **shampoo** and **detergent** bottles...



# Italy

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

# Italy

**Italy**

**EFFECORTA,**

**Italy**

**EFFECORTA,**  
**Capannori**



*L'esperienza effecorta*

[www.effecorta.it](http://www.effecorta.it)

**95% of products come from within  
70 km of store**



# 60 dispensing systems for solids





# 60 taps for liquids







# No plastic used for shopping bags



- Un pizzico di creatività a monte può far risparmiare milioni a valle





# 7. Economic Incentives

# The "Pay by bag" system



# The "Pay by bag" system

1

2

3

free

# The "Pay by bag" system

1

**free**

2

**free**

3



# The "Pay by bag" system

1

**free**

2

**free**

\$

**The more  
you make,  
the more  
you pay!**



Waste  
Reduction  
Initiatives

Composting  
Facility

Materials  
Recovery  
Facility

Residuals  
?



Reuse & Repair  
& Deconstruction

# **8. Residual Separation & Research Facility**

# **RESIDUAL SEPARATION & RESEARCH FACILITY**

# **RESIDUAL SEPARATION & RESEARCH FACILITY**

- 1. Built at entrance to landfill

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- 2. No material can enter landfill without it being separated and screened

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- 4. Toxics removed and identified



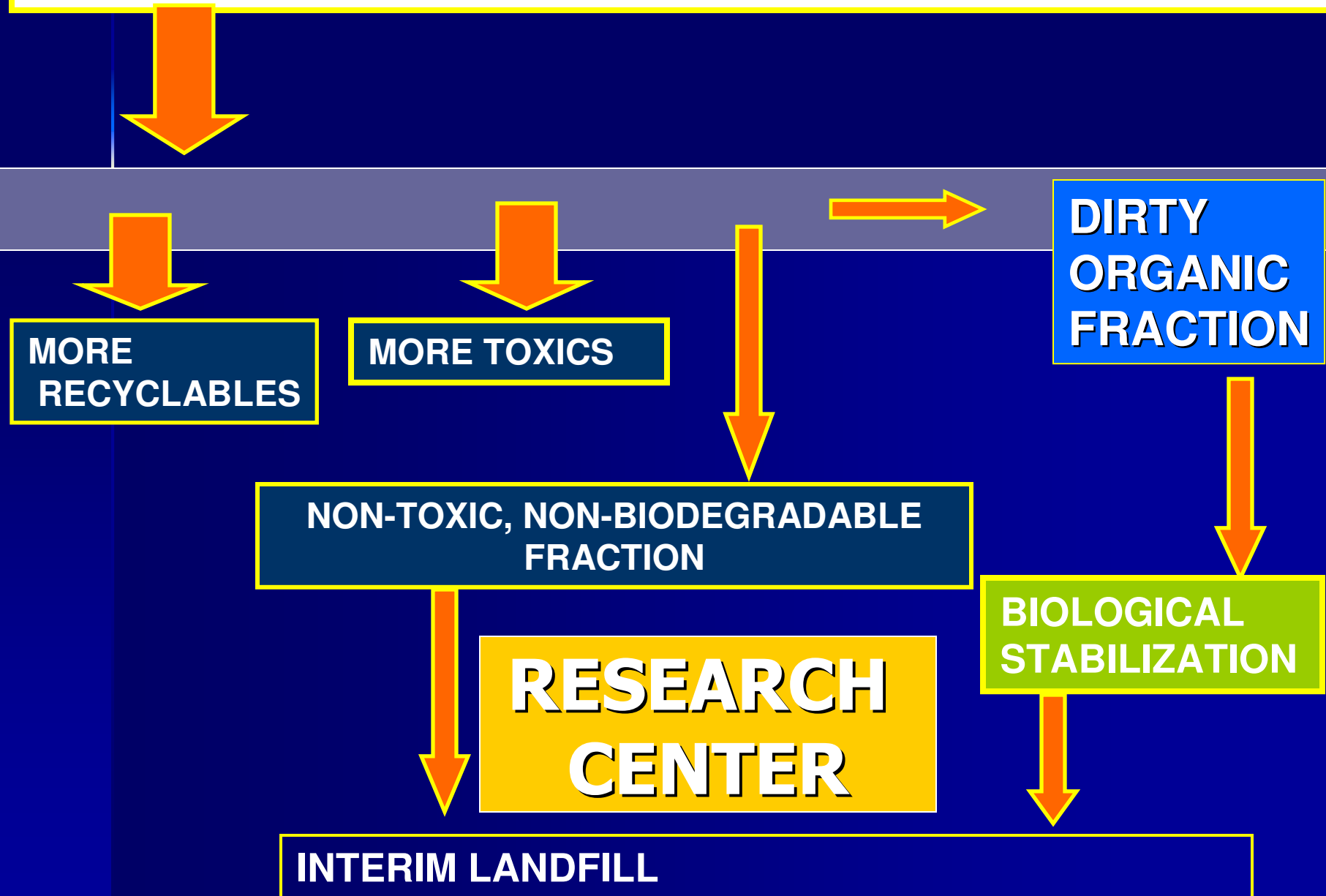
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- 5. Dirty organics biologically stabilized
- 6. Non-recyclable materials STUDIED

# RESIDUAL SCREENING & RESEARCH FACILITY



**NON-RECYCABLE MATERIALS**

**Local  
University**

**Or  
Technical College**

**RESEARCH  
CENTER**

# RESEARCH CENTER

## ■ TASKS:

# RESEARCH CENTER

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- TASKS:
- Improve **capture rate** of reusables, recyclables and clean compostables

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# RESEARCH CENTER

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- Improve **capture rate** of reusables, recyclables and clean compostables
- Recommend improved **waste avoidance strategies** for local businesses
- Develop **local uses** for some materials
- Recommend better industrial designs to industry on packaging and products
- Research for CLEAN Production

# NON-RECYCLABLE MATERIAL

# **NON-RECYCLABLE MATERIAL**

**1) CAN IT BE AVOIDED?**

# NON-RECYCLABLE MATERIAL

- 1) CAN IT BE AVOIDED?
- 2) CAN IT BE USED LOCALLY?

# NON-RECYCLABLE MATERIAL

- 1) CAN IT BE AVOIDED?
- 2) CAN IT BE USED LOCALLY?
- 3) CAN IT BE RE-DESIGNED?

# **NON- RECYCLABLE MATERIALS & OBJECTS**

**PLASTICS &  
COMPOSITES**

**HOUSEHOLD  
TOXICS**

**DIRTY  
ORGANIC  
FRACTION**



**ZERO WASTE  
RESEARCH CENTER**



# **THE RESIDUAL SEPARATION AND ZERO WASTE RESEARCH CENTER**



**COMMUNITY  
RESPONSIBILITY**

# THE RESIDUAL SEPARATION AND ZERO WASTE RESEARCH CENTER



# **The Message to Industry:**

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- If we can't reuse it, recycle it or compost it,

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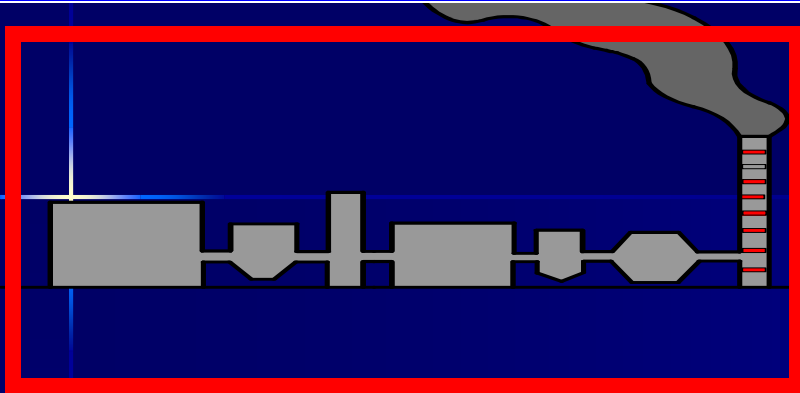
- If we can't reuse it, recycle it or compost it,
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# The Message to Industry:

- 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

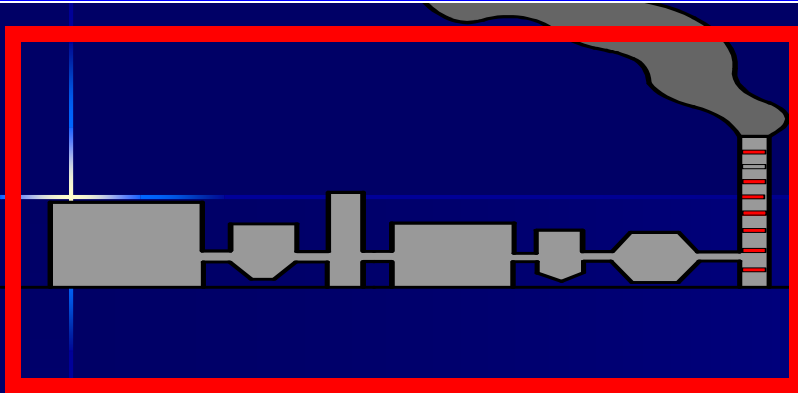
# TWO MODELS FOR TREATMENT OF RESIDUALS

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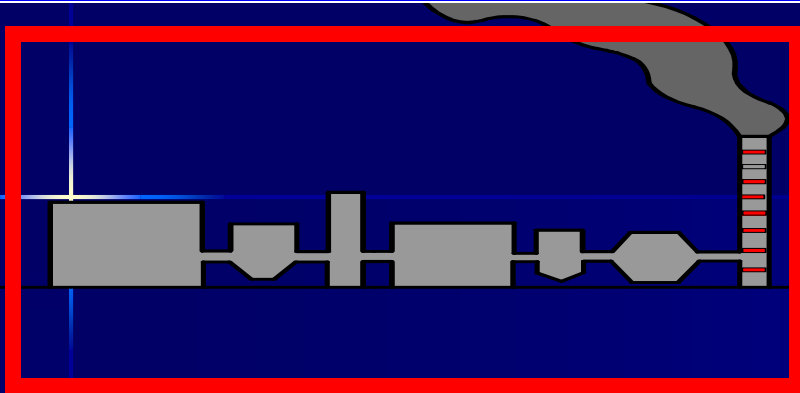
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+

TOXIC ASH  
LANDFILL

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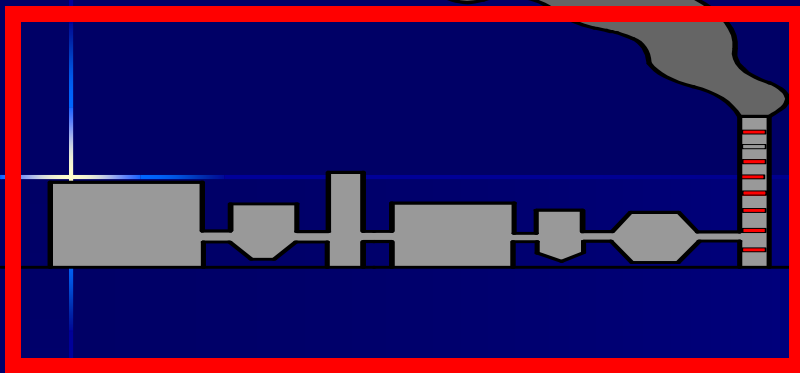


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TOXIC ASH  
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**RESIDUAL  
SEPARATION  
FACILITY**

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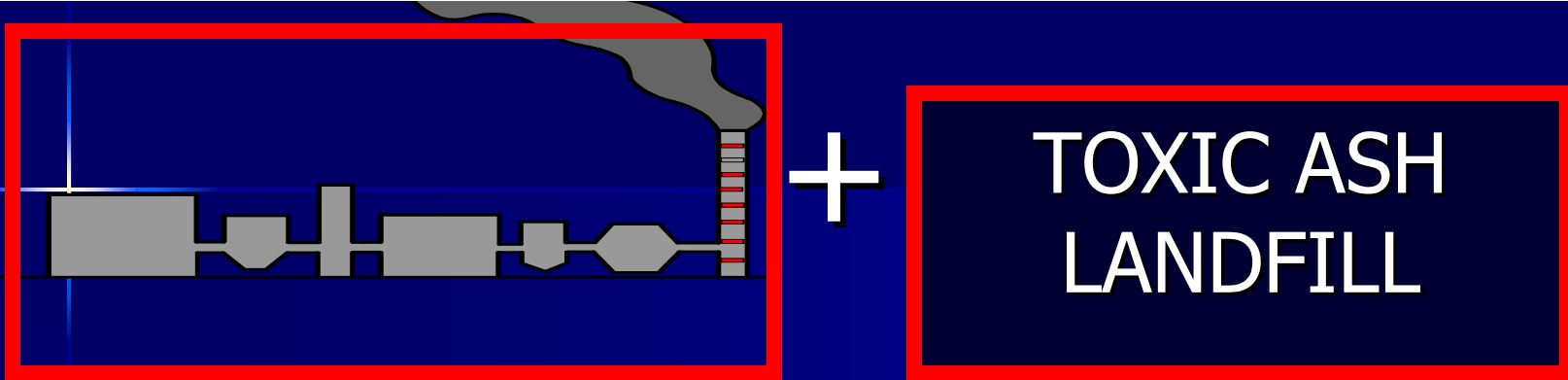
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**RESIDUAL  
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FACILITY**

**ZERO  
WASTE  
RESEARCH  
CENTER**

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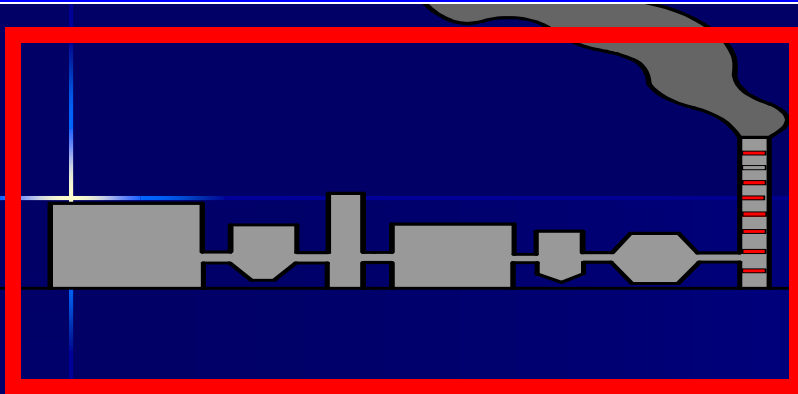


**RESIDUAL  
SEPARATION  
FACILITY**

**ZERO  
WASTE  
RESEARCH  
CENTER**

**INTERIM LANDFILL  
FOR STABILIZED  
"DIRTY"  
ORGANIC FRACTION**

# TWO MODELS FOR TREATMENT OF RESIDUALS



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TOXIC ASH  
LANDFILL

**RESIDUAL  
SEPARATION  
FACILITY**

**ZERO  
WASTE  
RESEARCH  
CENTER**

**INTERIM LANDFILL  
FOR STABILIZED  
"DIRTY"  
ORGANIC FRACTION**

**FEEDBACK FOR WASTE REDUCTION  
AND BETTER INDUSTRIAL DESIGN**



# **RESIDUAL SEPARATION & RESEARCH FACILITIES. Progress Report:**

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4. Coventry meeting Feb 2, 2010

## **FRAZIONE RESIDUA - Capannori Porta a Porta**

1.	Tessili e cuolo	16.52 %
2.	Pannolini	13.95 %
3.	Materiale organico da cucina	10.56 %
4.	Altra plastica: non imballo	9.98 %
5.	Imballaggi cellulosici poliaccoppiati	8.05 %
6.	Imballaggi poliaccoppiati in plastica	7.45 %
7.	Imballaggi flessibili in plastica	6.81 %
8.	Materiale organico da giardino	4.64 %
9.	Imballaggi rigidi in plastica (non bottiglie)	3.23 %
10	Giornali (quotidiani e riviste)	2.54 %

- FRAZIONE RESIDUA — Capannori**

1.	Tessili e cuoio	16.52 %
2.	Pannolini	13.95 %
3.	Materiale organico da cucina	10.56 %
4.	<b>Questa e' l'analisi del 17% che rimane dopo la separazione dell' 83% del materiale raccolto porta a porta</b>	
5.		
6.		
7.		
8.		
9.		
10		



# Belice Ambiente S.p.A.

*Regione Siciliana - Ato Tp2*

**Un'esperienza siciliana**

# GLI IMPIANTI

## LE DISCARICHE

**PARTANNA**

Satura

**C.BELLO DI  
MAZARA**

In esercizio

**CASTELVETRANO**

Chiusa

## I CENTRI DI RACCOLTA

13 centri per il conferimento individuale

## IL POLO TECNOLOGICO

**IMPIANTO DI  
COMPOSTAGGIO**

Completato

**IMPIANTO  
SELEZIONE E  
VALORIZZAZIONE  
FRAZIONE SECCA**

In costruzione

**OPERE DI  
URBANIZZAZIONE,  
AUTORIMESSA,  
CENTRO DI RICERCA**

In costruzione

# IL "MODELLO" DI BELICE AMBIENTE SPA



Raccolta porta a porta



Un centro di raccolta



Un angolo del Polo Tecnologico

# LA RICERCA

LO STUDIO E L'ANALISI PER UN "MODELLO  
SICILIANO"

**Università  
"L.Bocconi" Milano**

**Università  
di Palermo**

**Belice  
Ambiente  
SpA**

**Associazione  
"Rifiuti Zero"**

**Legambiente**



# **WITH THE ZERO WASTE 2020 STRATEGY**

# **WITH THE ZERO WASTE 2020 STRATEGY**

WE CONVERT **3 TONS OF TRASH**

# WITH THE ZERO WASTE 2020 STRATEGY

WE CONVERT 3 TONS OF TRASH  
into:

# WITH THE ZERO WASTE 2020 STRATEGY

WE CONVERT 3 TONS OF TRASH

into:

1 ton of compostables

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1 ton of recyclables

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and

# WITH THE ZERO WASTE 2020 STRATEGY

WE CONVERT 3 TONS OF TRASH

into:

1 ton of compostables

1 ton of recyclables

and

1 ton of EDUCATION for  
SUSTAINABILITY!

# **9. Better Industrial Design**



10. An interim landfill  
for biologically  
stabilized dirty organic  
fraction

# Interim landfill

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# Interim landfill

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- 2. We need to shift the profit from waste disposal to genuine resource recovery
- 3. Incinerators and mega-landfills are in the corporate interest of multi-national waste corporations – zero waste is in the public interest (and the planet's interest!)
- 4. Key question: will political leaders side with corporate interest or the public interest?

# **SUMMARY**

## **10 steps to Zero Waste**

# Source Separation



**Source  
Separation**

**Door to Door  
Collection**

**Source  
Separation**

**Door to Door  
Collection**

**Composting**

**Source  
Separation**

**Door to Door  
Collection**

**Composting**

**Recycling**

**Source  
Separation**

**Door to Door  
Collection**

**Composting**

**Recycling**

**Reuse, Repair  
& Community  
Center**

**Source  
Separation**

**Door to Door  
Collection**

**Composting**

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**Reuse, Repair  
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**Waste  
Reduction  
Initiatives**

**Source  
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**Waste  
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**Better  
Industrial  
Design**



**Source  
Separation**

**Door to Door  
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Incentives**

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Separation &  
Research  
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**Better  
Industrial  
Design**

**Temporary Landfill**

**Source  
Separation**

**Door to Door  
Collection**

**Composting**

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**Waste  
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**Economic  
Incentives**

**Residual  
Separation &  
Research  
Center**

**Better  
Industrial  
Design**

**Temporary Landfill**

**2020**

# 70 - 80%

## COMMUNITY RESPONSIBILITY

**Residual  
Separation &  
Research  
Facility**

**Better  
Industrial  
Design**

**INTERIM LANDFILL**

**2020**

**70-80%**

**COMMUNITY RESPONSIBILITY**

**20-30%**

**INDUSTRIAL  
RESPONSIBILITY**

**INTERIM LANDFILL**

**2020**

# **Industrial Responsibility**

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## **1. Design for sustainability**

# Industrial Responsibility

1. Design for sustainability
2. Clean production

# Industrial Responsibility

1. Design for sustainability
2. Clean production
3. Extended Producer Responsibility (EPR)



# **EPR-** packaging

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- **Each bottle reused 18 times**
- **It saves the company money**
- **2000 jobs in collection and cleaning**

# **EPR-** products

XEROX CORPORATION EUROPE

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- Recovers copying machines from 16 different countries

Takes them to huge warehouses in the Netherlands, where the machines are stripped down for re-useable parts and recyclable materials



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# EPR- products

## XEROX CORPORATION EUROPE

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- Takes them to huge warehouses in the Netherlands, where the machines are stripped down for re-useable parts and recyclable materials
- **95% of materials recovered!** AND
- This is saving Xerox **\$76 millions a year!!**

**Solid waste is the visible  
face of inefficiency!**

**For more examples of  
Industrial Responsibility**

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- Contact Gary Liss at  
[gary@garyliss.com](mailto:gary@garyliss.com)

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## **4. Progress towards Zero Waste around the world**

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- [www.zwia.org](http://www.zwia.org) (Zero Waste International Alliance)
- [www.GRRN.org](http://www.GRRN.org) (Grass Roots Recycling Network)

## 4. Progress towards Zero Waste around the world

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- [www.CRRA.org](http://www.CRRA.org) (California Resources Recovery Association)

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- [www.no-burn.org](http://www.no-burn.org) (Global Alliance for Incineration Alternatives)

# California

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- Some communities said why stop at 50%, why not aim for 60%, 70%...?
- Why not aim for Zero Waste?

# Envision a world without waste

Mayor's directives

Phase out of Urban Landfills

RENEW LA

No wasted resources

Optimize City's  
collection programs

70% diversion by 2015

90% diversion by 2025

Alternative Technology

Convert the City's 750+ collection  
trucks to clean-burning LNG by 2010

Sustainable waste resources/biosolids management



# Envision a world without waste



**LOS ANGELES, CALIFORNIA (pop. 4 million)**

# Solid Waste Integrated Resources Plan

**All of us together can make Zero!**

## Media Breakfast Briefing

January 23, 2007

Reina Pereira, Project Manager, SWIRP and  
Senior Environmental Engineer,  
Los Angeles Bureau of Sanitation



**ZERO**  
**WASTE PLAN**  
Solid Waste Integrated Resources Plan

# Canberra, Australia



## NEW ZEALAND

Over 70%  
of communities  
have declared  
a Zero Waste  
strategy



# **Prince Edward Island, Canada**

# Prince Edward Island, Canada

- Whole island has door-to-door collection of recyclables and compostables



# Nova Scotia, Canada (video)

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- 50% diversion in 5 years (Halifax ~ 60%)
- 1000 jobs created collecting and treating discarded materials
- Another 2000 jobs created in the industries handling the collected material
- Nearly all the separated materials are re-used in Nova Scotia's own industries.

# Italy

# Italy

- Over 2000 communities in Italy are achieving over 50% diversion using “door to door” collection systems

# Italy

- Over 2000 communities in Italy are achieving over 50% diversion using “door to door” collection systems
- Over 200 communities achieving over 70% diversion



# Italy

# 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

- The **Treviso** region - 22 communities averaging **76% diversion** (Priula consortium)

# Italy

- Villafranco d'Asti  
(Piedmont, population = 30,000) has reached 85% diversion

# Spain

# Spain

- Usurbil in Basque Country

# Spain

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



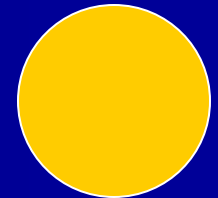
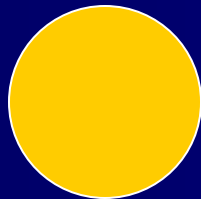
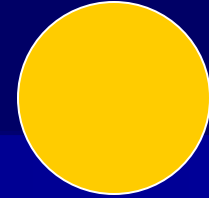
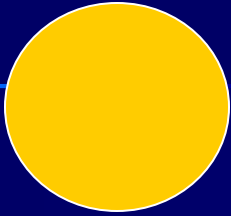
## **5. Linking Zero Waste to Sustainability**

# The Zero Waste Research Centers

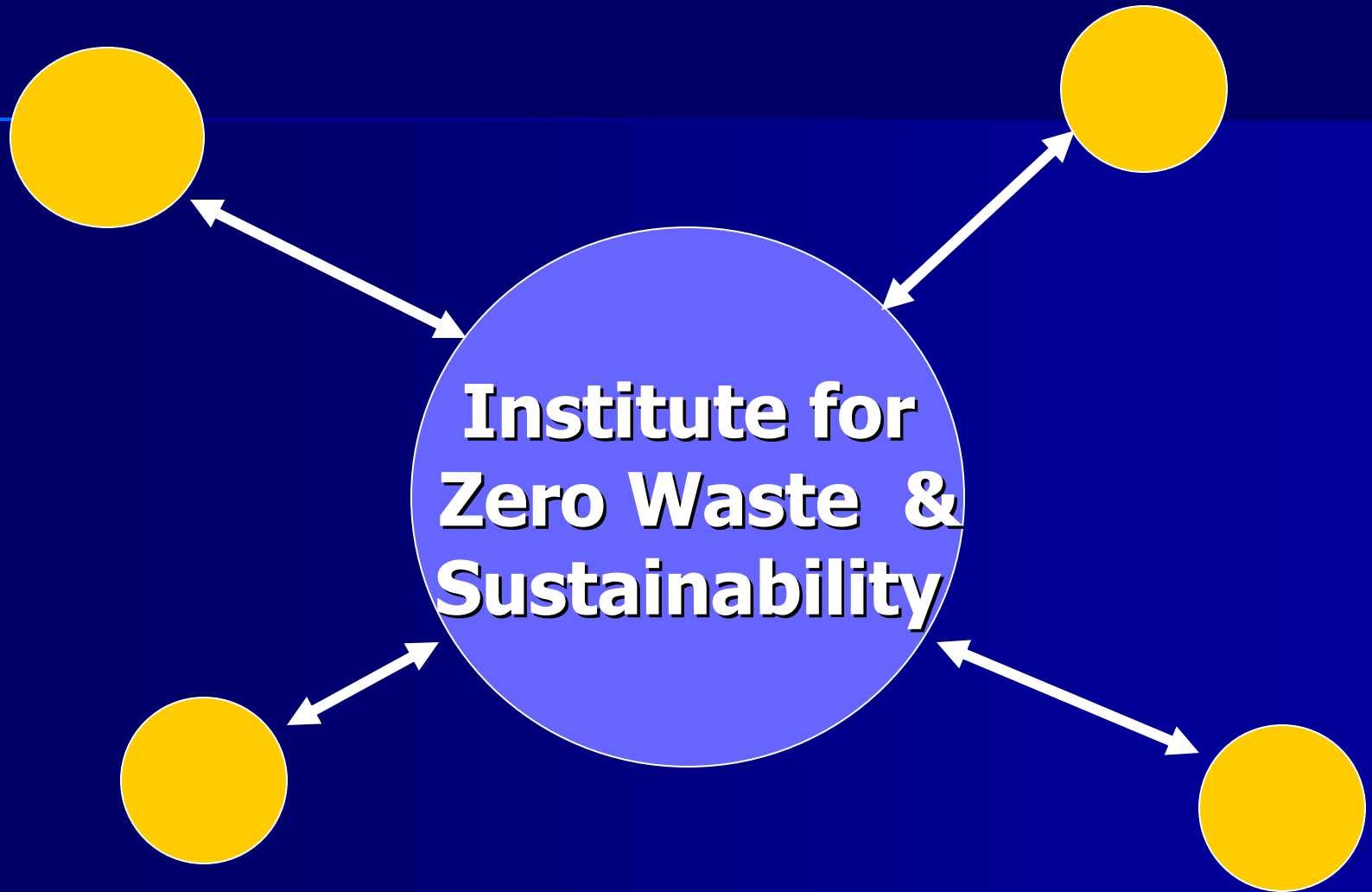
# The Zero Waste Research Centers

**Can become the  
“University-Community  
laboratories for  
sustainability”**

# Zero Waste Research Centres



# Zero Waste Research Centres



# **Institute for Zero Waste and Sustainability**

# **Institute for Zero Waste and Sustainability**

**1) Research for better industrial design**

# **Institute for Zero Waste and Sustainability**

- 1) Research for better industrial design**
- 2) Linking zero waste with other key developments needed for sustainability**





Better  
Industrial  
Design

Sustainable  
Agriculture

Education  
For  
Sustainability

Sustainable  
Architecture

Sustainable  
industries  
& Jobs

Zero Waste 2020

Sustainable  
Community  
development

Sustainable  
Economic  
development

Sustainable  
Energy



**Composting**

Better  
Industrial  
Design

**Sustainable  
Agriculture**

**Education  
For  
Sustainability**

**Sustainable  
Architecture**

**Sustainable  
industries  
& Jobs**

**Zero Waste 2020**

**Sustainable  
Community  
development**

**Sustainable  
Economic  
development**

**Sustainable  
Energy**



**Composting**

**Research Center**

**Better  
Industrial  
Design**

**Sustainable  
Agriculture**

**Education  
For  
Sustainability**

**Sustainable  
Architecture**

**Sustainable  
industries  
& Jobs**

**Zero Waste 2020**

**Sustainable  
Community  
development**

**Sustainable  
Economic  
development**

**Sustainable  
Energy**



**Composting**

**Research Center**

**Better  
Industrial  
Design**

**Sustainable  
Agriculture**

**Education  
For  
Sustainability**

**Deconstruction**

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**Anaerobic  
Digestion**

**Sustainable  
Energy**

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industries  
& Jobs**

**Zero Waste 2020**

**Anaerobic  
Digestion**

**Sustainable  
Community  
development**

**Sustainable  
Economic  
development**

**Sustainable  
Energy**

**Incineration is  
not sustainable  
energy!**



**Composting**

**Research Center**

**Better  
Industrial  
Design**

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Agriculture**

**Education  
For  
Sustainability**

**Deconstruction**

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Architecture**

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industries  
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**Zero Waste 2020**

**Anaerobic  
Digestion**

**Sustainable  
Energy**

**Sustainable  
Community  
development**

**Sustainable  
Economic  
development**

**100's of "green boxes"**





**Composting**

**Research Center**

**Better  
Industrial  
Design**

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Agriculture**

**Education  
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**Deconstruction**

**Sustainable  
Architecture**

**Sustainable  
industries  
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**Zero Waste 2020**

**Anaerobic  
Digestion**

**Sustainable  
Energy**

**Sustainable  
Community  
development**

**Sustainable  
Economic  
development**

**Reuse &  
Repair  
Centers**

**100's of "green boxes"**

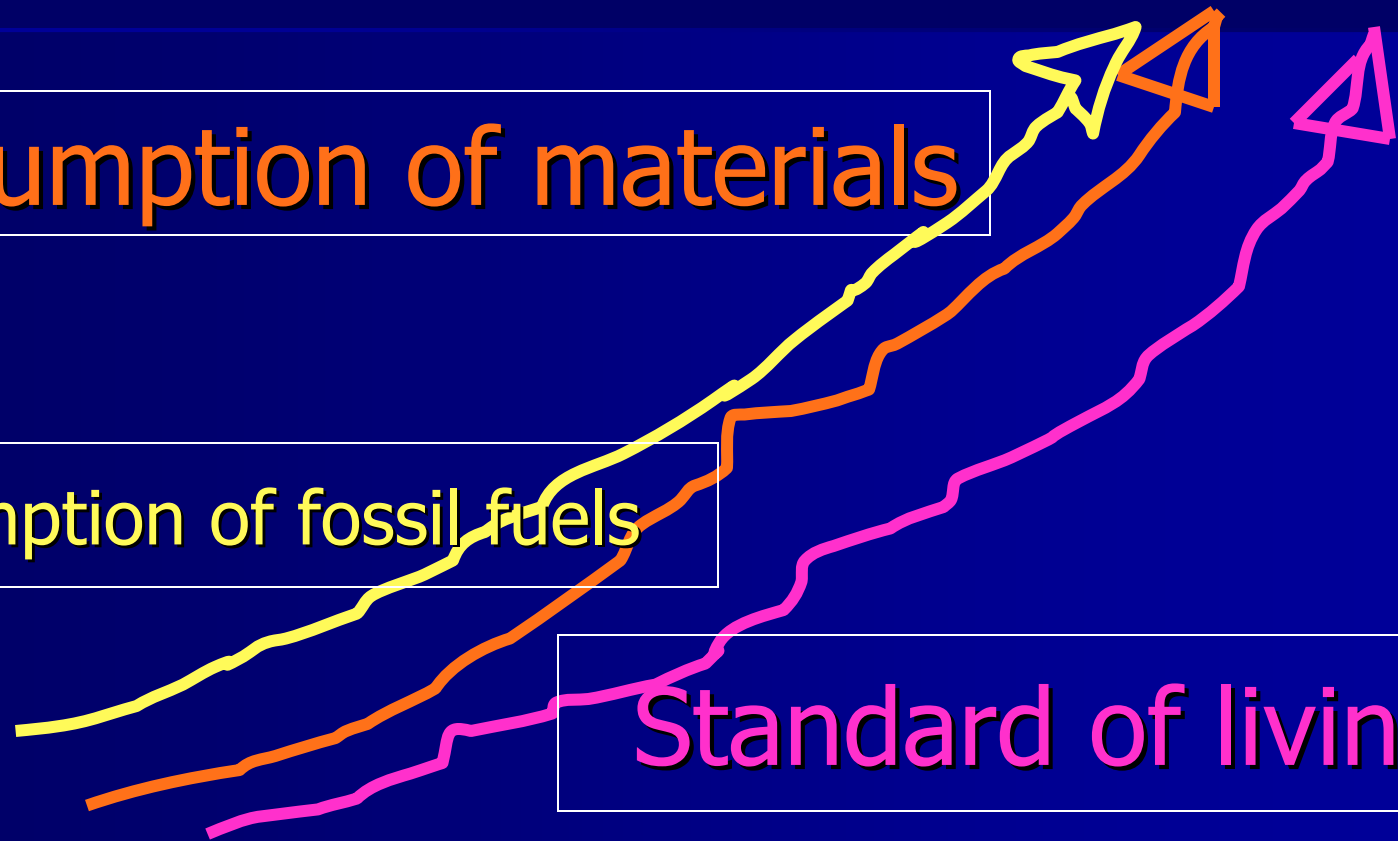
## **6. Back to the Big Picture**

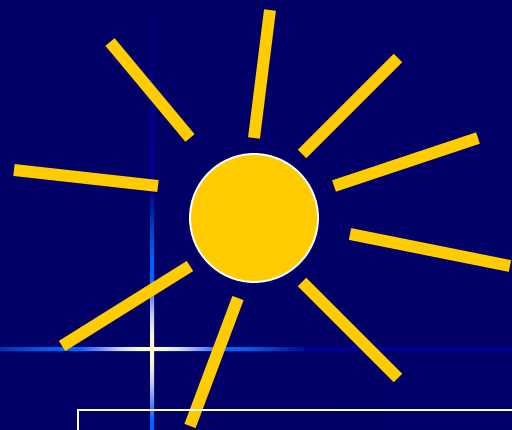
# Current situation

Consumption of materials

Consumption of fossil fuels

Standard of living

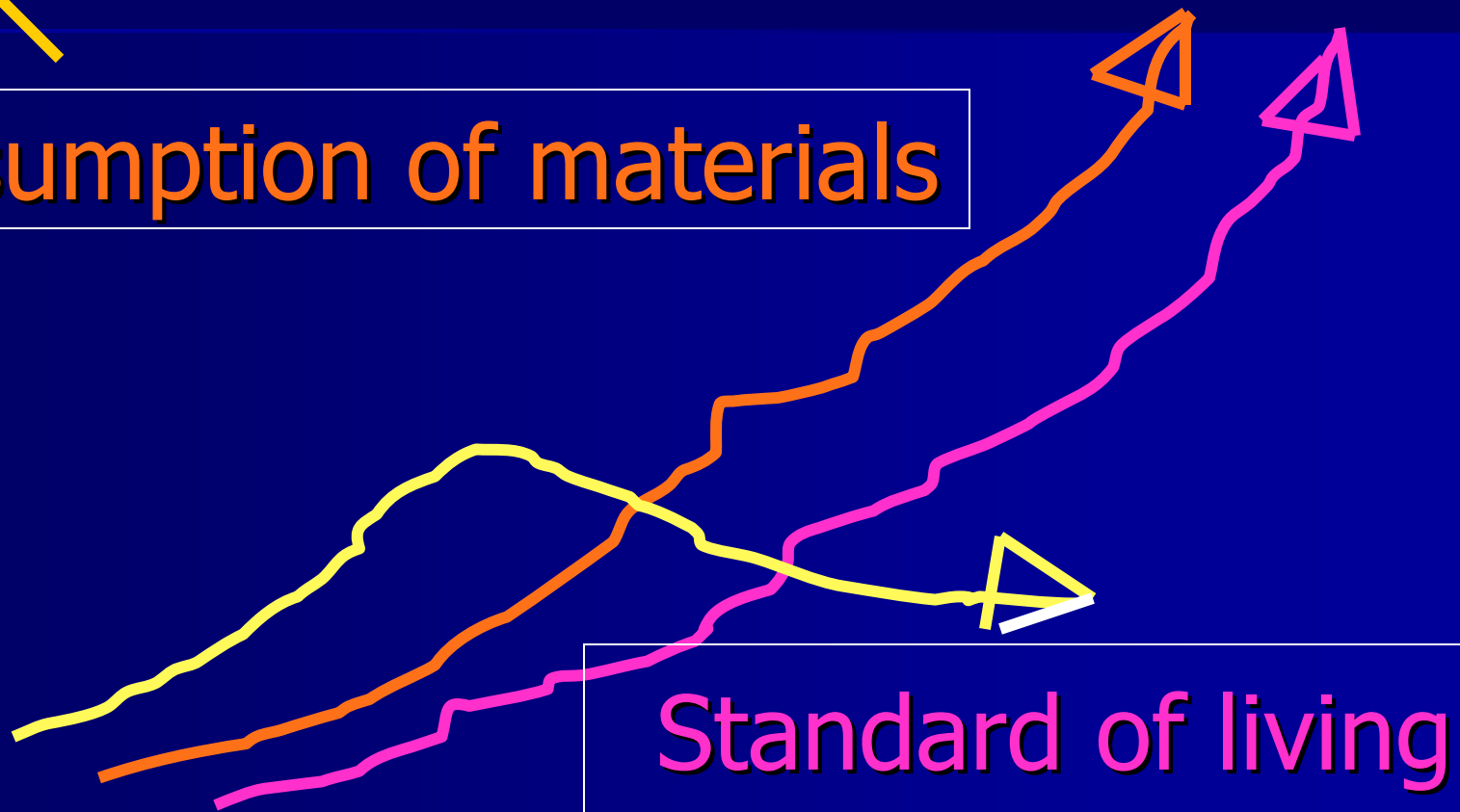




Solar Energy

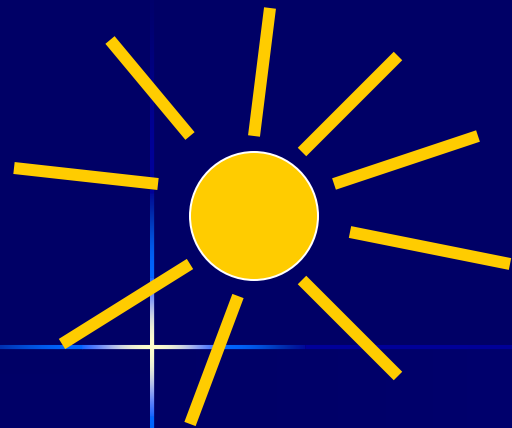
Change 1

Consumption of materials



Standard of living

## Change 2



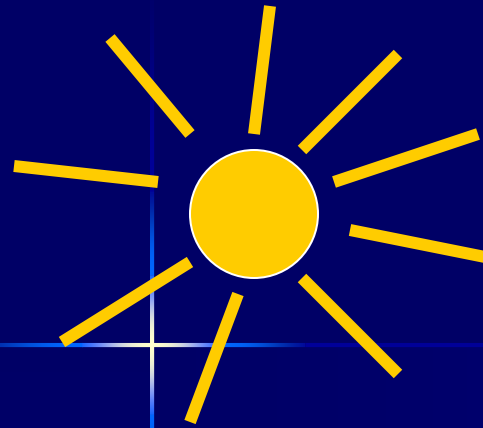
Solar Energy

**Zero Waste**

Standard of living



## Change 3



Solar Energy

**Zero Waste**

Quality of Life



**We have to separate the**  
**Quality of life** from the  
**material consumption**

**We have to separate the**  
**Quality of life** from the  
**material consumption**

Material consumption

Quality of life



**We have to separate the**  
**Quality of life** from the  
**material consumption**

Material consumption



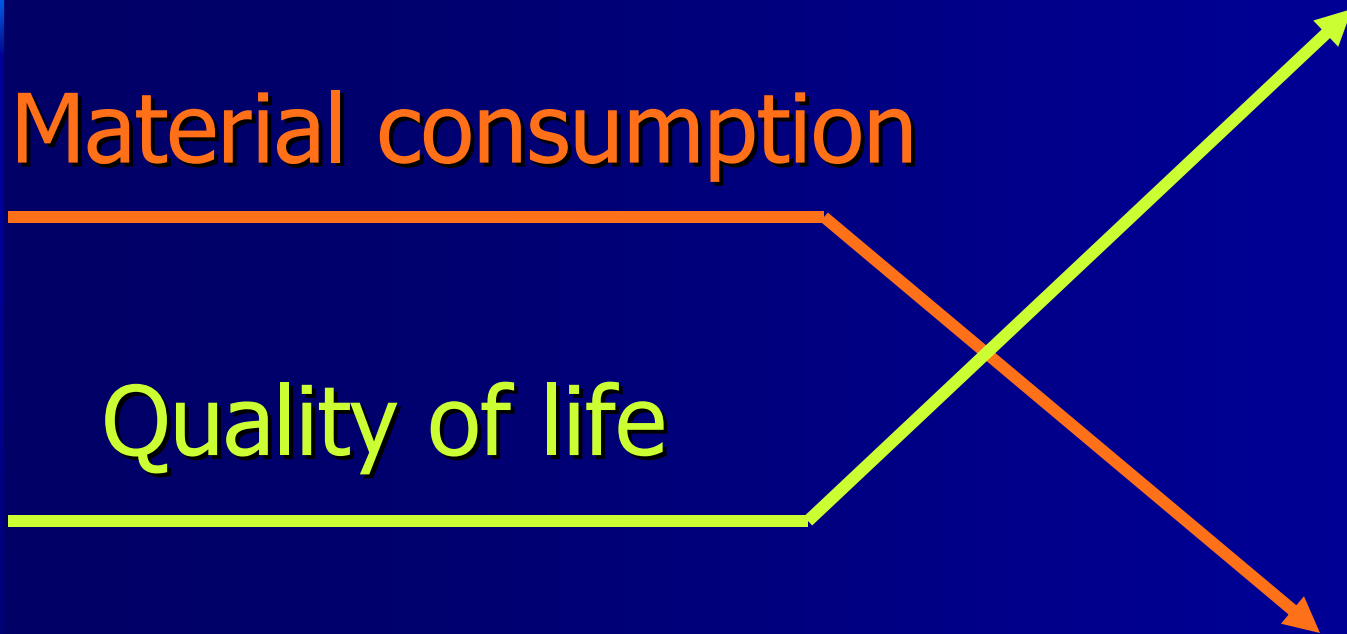
The diagram consists of two horizontal lines. The top line is orange and is labeled 'Material consumption'. The bottom line is yellow and is labeled 'Quality of life'. An orange arrow starts from the right end of the orange line and points diagonally down and to the right, ending near the bottom right of the slide.

Quality of life

We have to separate the  
**Quality of life** from the  
**material consumption**

Material consumption

Quality of life



**Less money**  
**More meaning!**

**Consume less  
Enjoy more!**

**To fight over-consumption**

**We need to swap a life built  
around acquiring a series of  
objects...**

**To a life built around a series  
of expanding human  
relationships**

In the 1960's

**"Make Love,  
Not War"**

In the 2000's

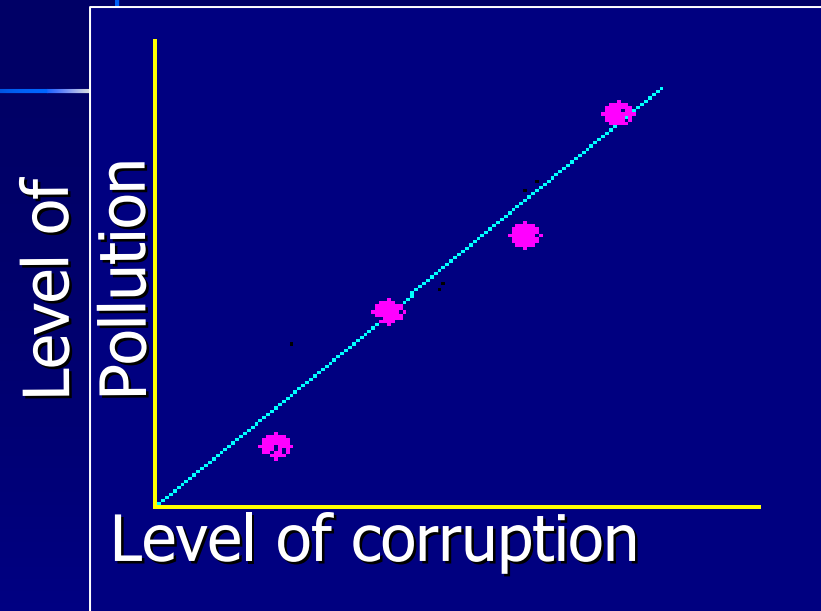
**"Make Love,  
Not Waste"**



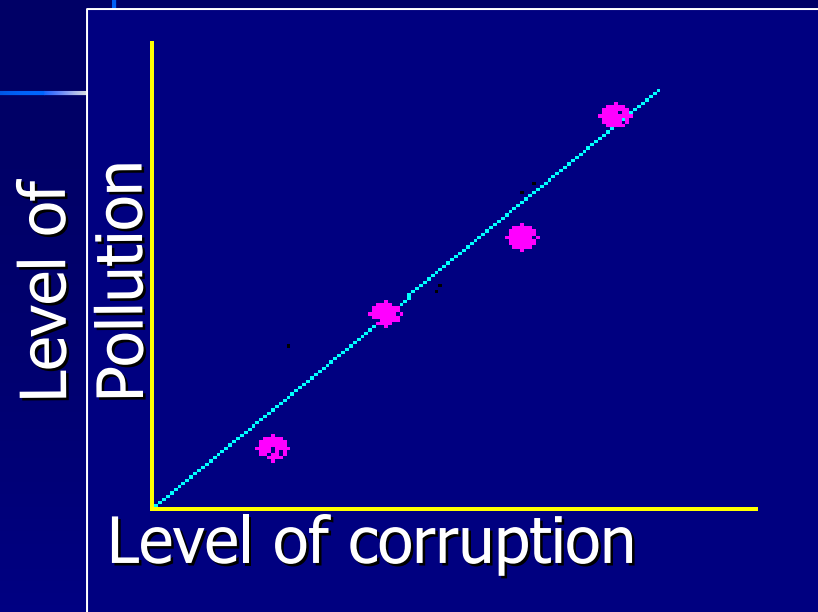
In the 2000's

**“Make Friends,  
Not Waste”**

# THE BAD LAW

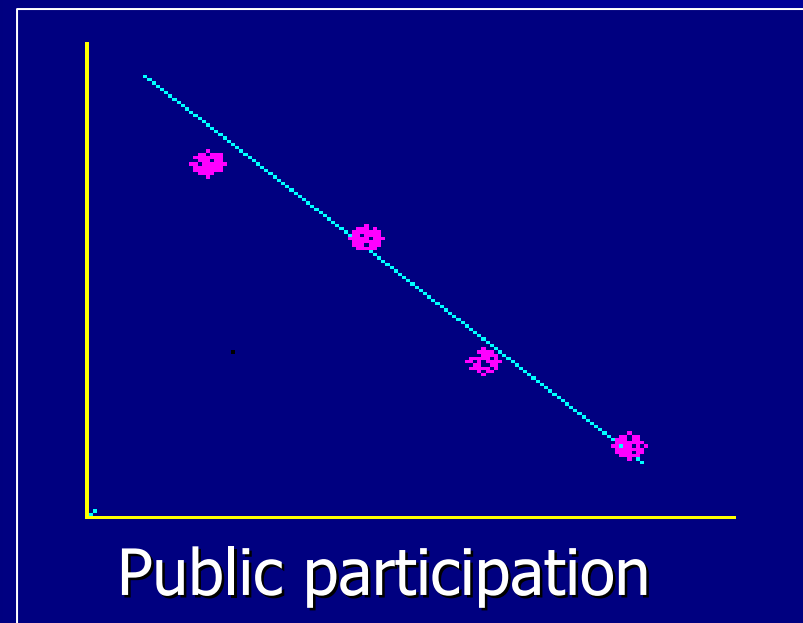


# THE BAD LAW



Level of  
Pollution

# THE GOOD LAW



A threatened community  
is a strengthened  
community if people  
work together.

## EFFECTING CHANGE

Is like driving a nail  
through a piece of wood

# EFFECTING CHANGE



Experts may  
sharpen the  
point

# EFFECTING CHANGE



Experts may  
sharpen the  
point

But you need the hammer of public  
opinion to drive the nail home

# Three final messages



# Three final messages

- 1. **To citizens** - don't let the experts take your common sense away

# Three final messages

- 1. **To citizens** - don't let the experts take your common sense away
- 2. **To politicians** - put your faith back in people

# Three final messages

- 1. **To citizens** - don't let the experts take your common sense away
- 2. **To politicians** - put your faith back in people
- 3. **To activists** -

# Three final messages

- 1. **To citizens** - don't let the experts take your common sense away
- 2. **To politicians** - put your faith back in people
- 3. **To activists** -
- HAVE FUN!!!!!!!!!!!!!!!!!!!!!!

# **“The Battle Hymn” dei rifiuti**

(Chorus)

We don't want incineration

We don't want incineration

We don't want incineration

**We know there's a better way!**

# **“The Battle Hymn” dei rifiuti**

Mine eyes have seen the garbage  
That's a smoldering on the grate  
We must stop incineration  
Before it is too late  
Unless we wish the dangers  
We had better separate  
And we must do it now!

# **“The Battle Hymn” dei rifiuti**

(Chorus)

We don't want incineration

We don't want incineration

We don't want incineration

**We know there's a better way!**



**God  
recycles,  
The devil  
burns**





[www.FluorideALERT.org](http://www.FluorideALERT.org)