Zero Waste:
A Key Stepping Stone to Sustainability

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OUTLINE

- A. A quick word about sustainability
- B. Zero Waste
- C. 10 Steps to Zero Waste
- D. The critical step forward
- E. From ZW to sustainability
- F. Back to the Big Picture

A.
A quick word about sustainability

- We are living on this planet as if we had another one to go to

Sustainability

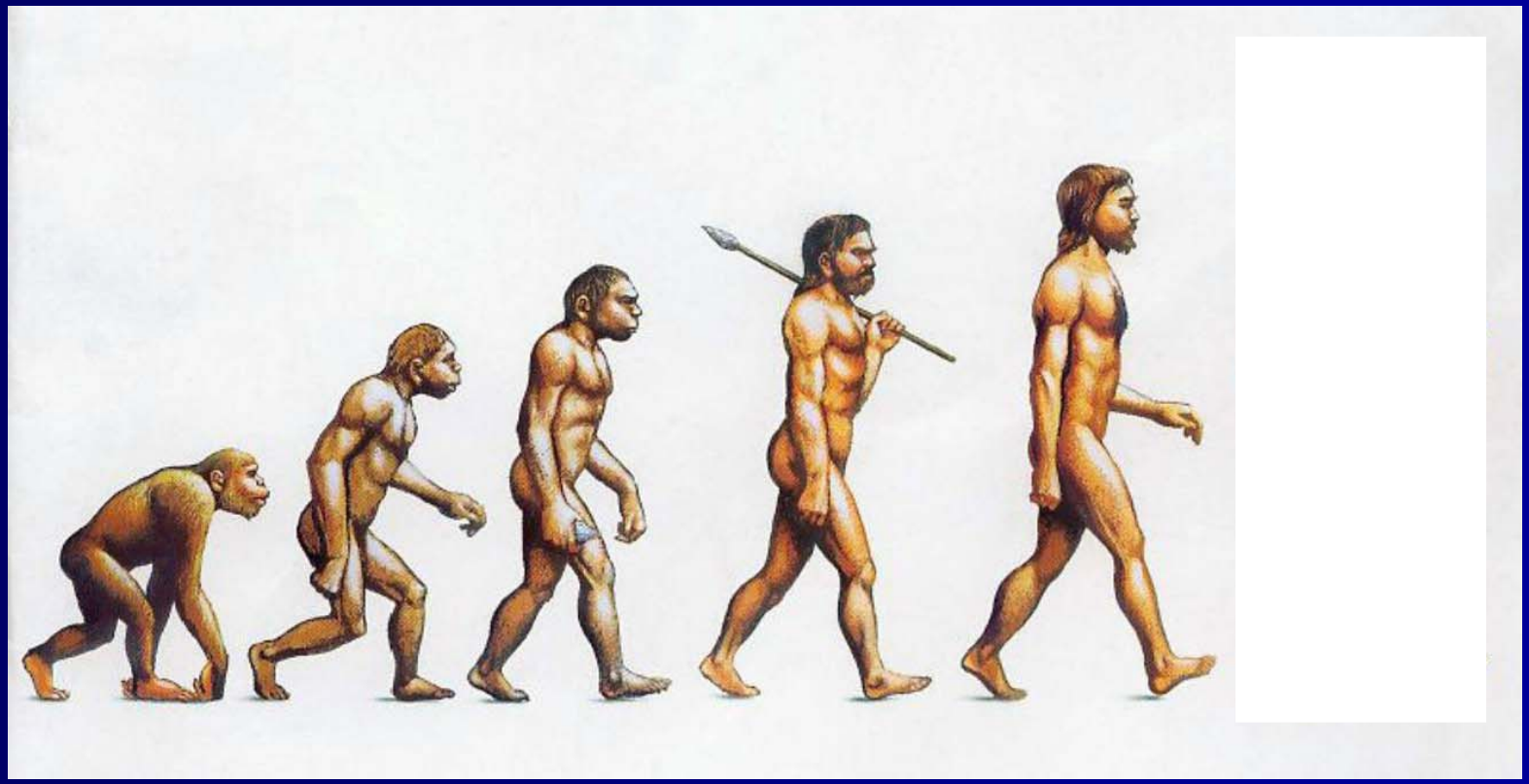
- We would need FOUR planets if every one consumed as much as the average American
- We would need TWO planets if every one consumed as much as the average European
- Meanwhile, India, China etc. are copying our consumption patterns
- Something has got to change and the best place to start is with waste

Our real task is to fight over-consumption

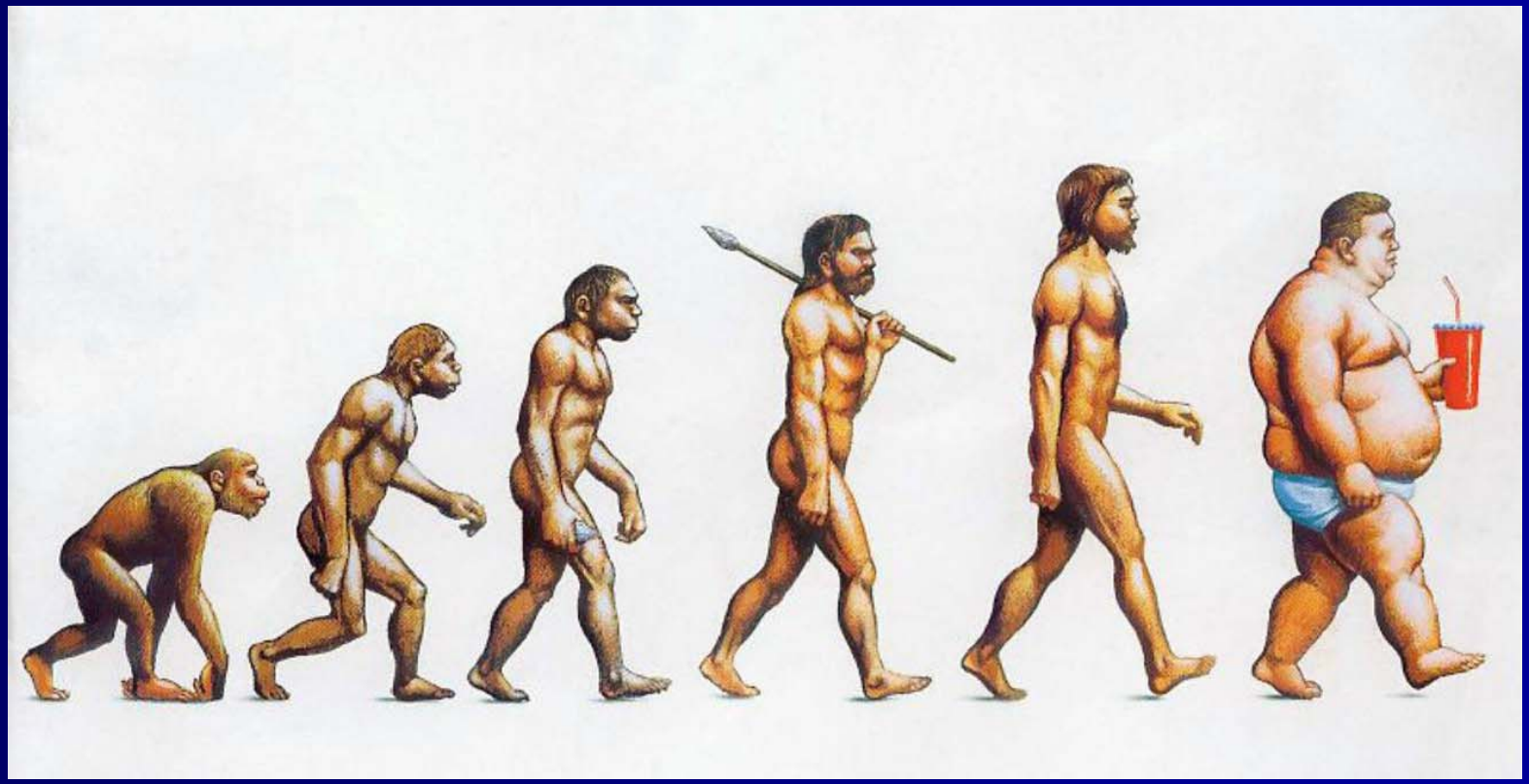
“The world has enough for everyone’s need but not for everyone’s greed”

Mahatma Gandhi

Man



Modern man!



Please note that while waste incineration is aggressively promoted by many companies and countries, it is NOT sustainable

Kg Greenhouse gas/tonne Municipal Waste

A combination of recycling and composting is 46 times better	-461
at reducing greenhouse gases than	X 46
Incineration generating electricty	-10

Waste Management Options and Climate Change. AEA 2001

B.
Zero Waste

ZERO WASTE IS A NEW DIRECTION

THE BACK END OF WASTE MANAGEMENT

The
BACK END
of
WASTE
MANAGEMENT

The
FRONT END
of
RESOURCE
MANAGEMENT

The
BACK END
of
WASTE
MANAGEMENT

The
FRONT END
of
RESOURCE
MANAGEMENT
&
BETTER
INDUSTRIAL
DESIGN

The
BACK END
of
WASTE
MANAGEMENT

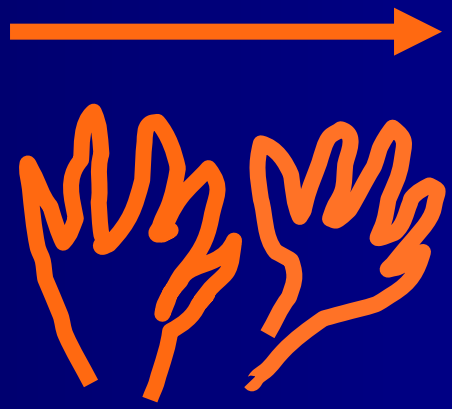
The
FRONT END
of
RESOURCE
MANAGEMENT
&
BETTER
INDUSTRIAL
DESIGN
&
POST-
CONSUMERISM

C.
TEN Practical steps towards Zero Waste

STEP 1. Zero Waste starts with something everyone has

- The ten things on the end of our hands!
- These are the “magic machines” which can make sure that we do not convert discarded resources into waste

waste



Resources

1. Source Separation

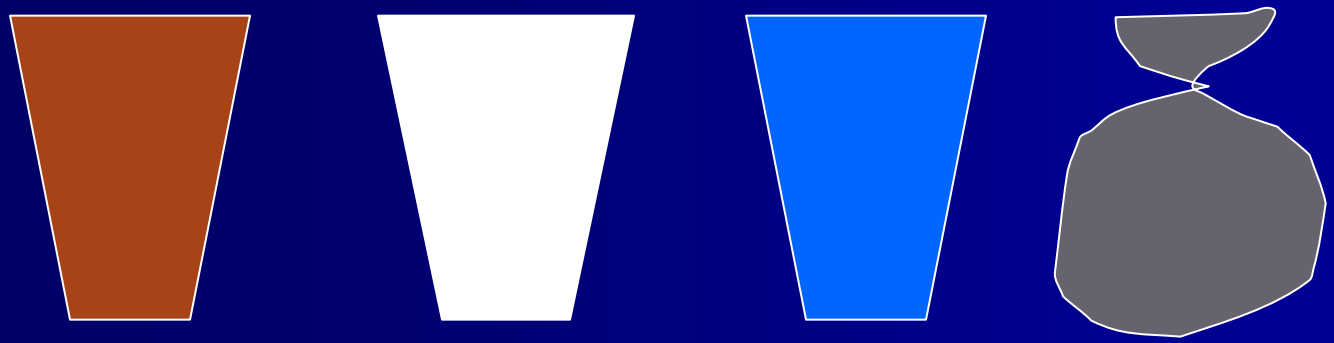
1. Source Separation

2. Door to Door Collection

“The Fantastic 3”

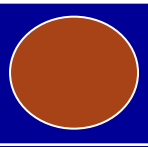
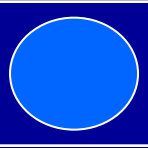
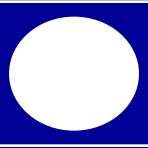
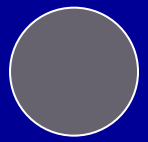
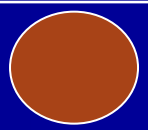
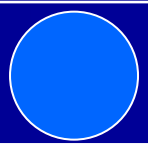
The San Francisco system

I “Fantastici 4”



Capannori, Italia

Capannori

LUNEDI	ORGANICO	
MARTEDI	MULTIMATERIALE	
MERCOLEDI	CARTA	
GIOVEDI	FRAZIONE RESIDUA	
VENERDI	ORGANICO	
SABATO	MULTIMATERIALE	

1. Source Separation

2. Door to Door Collection

3. Composting

Composting plant for San Francisco

1. Source Separation

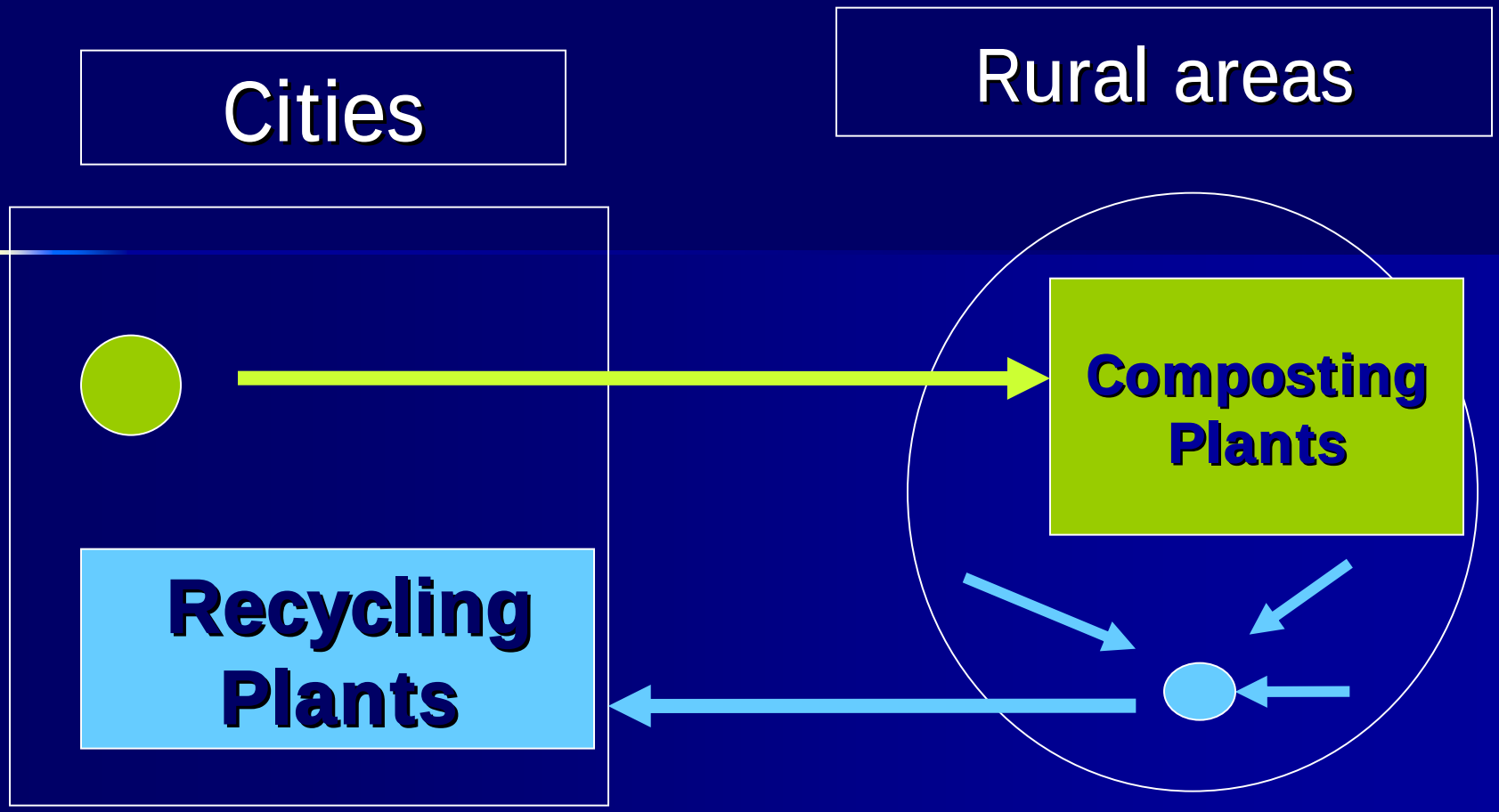
2. Door to Door Collection

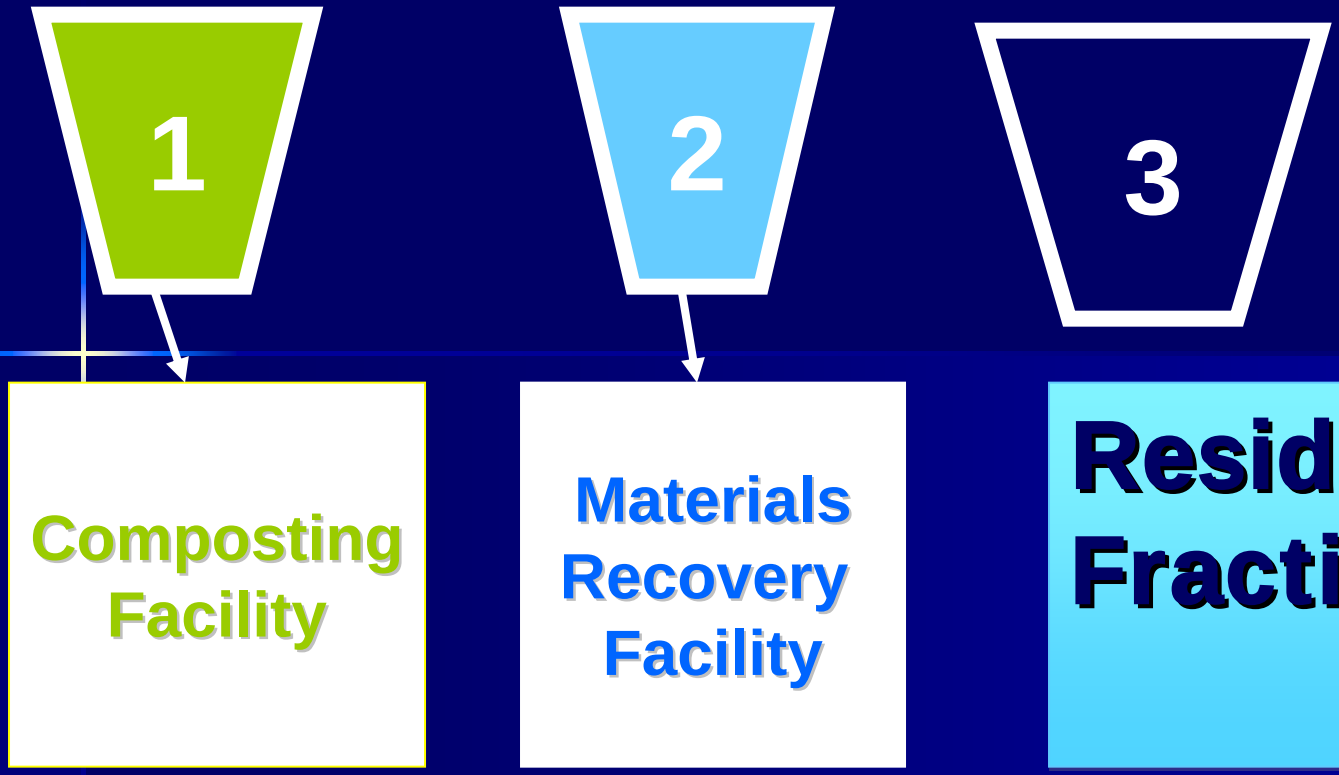
3. Composting

4. Recycling

MATERIALS RECOVERY FACILITY

at Pier 96


Cities
Rural areas
Composting Plants
Recycling Plants


1
2
3
Composting Facility
Materials Recovery Facility
Residual Fraction

We have to minimize the residual fraction with…

- 1) Waste reduction initiatives
- 2) Reuse, repair and deconstruction
- 3) Economic incentives

1. Source Separation

2. Door to Door Collection

3. Composting

4. Recycling

5. Waste Reduction Initiatives

Undesirable packaging

- THREE options:
- Ban it
- Tax it
- Put a returnable deposit on it

Ireland

- 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

Italy

www.EFFECORTA.it

Capannori

60 taps for liquids

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

1. Source Separation

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4. Recycling

5. Waste Reduction Initiatives

6. Reuse, Repair & Deconstruction

Reuse, Repair & Deconstruction

Urban Ore, Berkeley, California


URBAN ORE ECOPARK


CIRCUS
1. SALE IS COM
A CASH REGISTE
2. NO REFUNDS WI
CASH REGISTER
3. NO REFUNDS AF
4. PLEASE BE READ
YOUR CASH REG
UPON REQUES

- “Economically, incineration represents ONE BIG BLACK BOX
- The Zero Waste strategy represents 100’s of LITTLE GREEN BOXES”
- (Ted Ward, Zero Waste, Del Norte County, California)

VALUE OF L.A. DISCARDS

Market Categories	%	Tons/Year	$/ton	$
1.Reuse	2.0	72,000	550	39,600,000
2.Paper	[illegible]	792,000	20	15,840,000
3.Plant Debris	5.5	198,000	7	1,386,000
4.Putrescibles	17.0	612,000	7	4,284,000
5.Wood	4.0	144,000	8	1,152,000
6.Ceramics	13.0	468,000	4	1,872,000
7.Soils	10.0	360,000	7	2,520,000
8.Metals	4.0	144,000	40	5,760,000
9.Glass	2.0	72,000	10	720,000
10.Polymers	8.0	288,000	100	28,800,000
11.Textiles	2.0	72,000	20	1,440,000
12.Chemicals	0.5	18,000	15	270,000
No market (diapers, treated wood, mistakes)	10.0	360,000		0
TOTAL PER YEAR	100	3,600,000		$103,644,000

reuse

VIDEOS

- "On the Road to Zero Waste"
- Part 1: Nova Scotia
- Part 2: Burlington, Vermont
- Part 3: Canberra, Australia
- Part 4: San Francisco
- Zero Waste: Idealistic Dream or Realistic Goal?
- Pieces of Zero: Creativity versus Waste
- www.AmericanHealthStudies.org

1. Source Separation

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4. Recycling

5. Waste Reduction Initiatives

6. Reuse, Repair & Deconstruction

7. Economic Incentives

The “ Pay by bag” system

free

free

The “ Pay by bag” system

free

free

The more you make, the more you pay!

D.
A critical step to achieve Zero Waste

1. Source Separation

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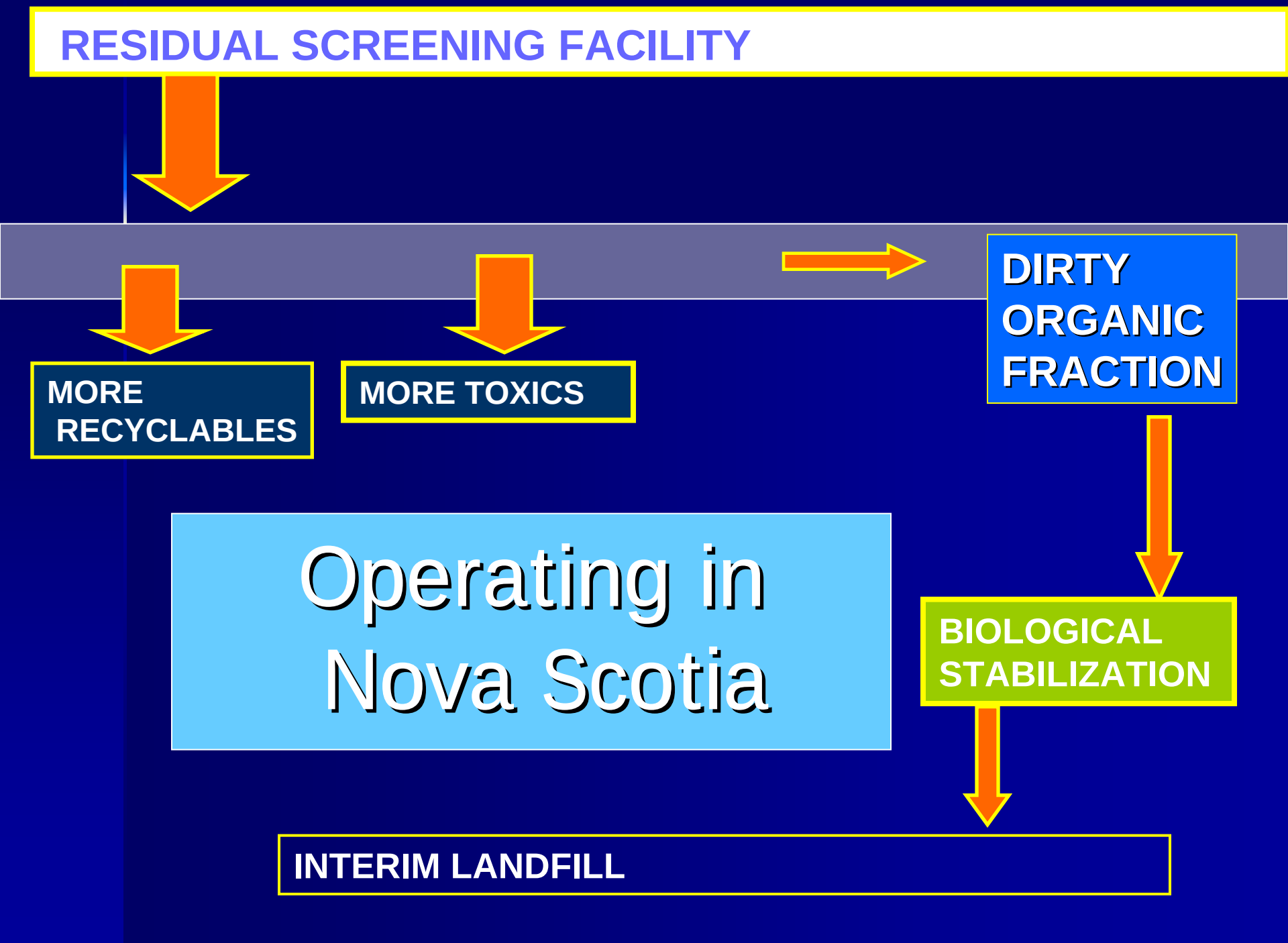
8. Residual Separation & Research Center

RESIDUAL SEPARATION & RESEARCH FACILITY

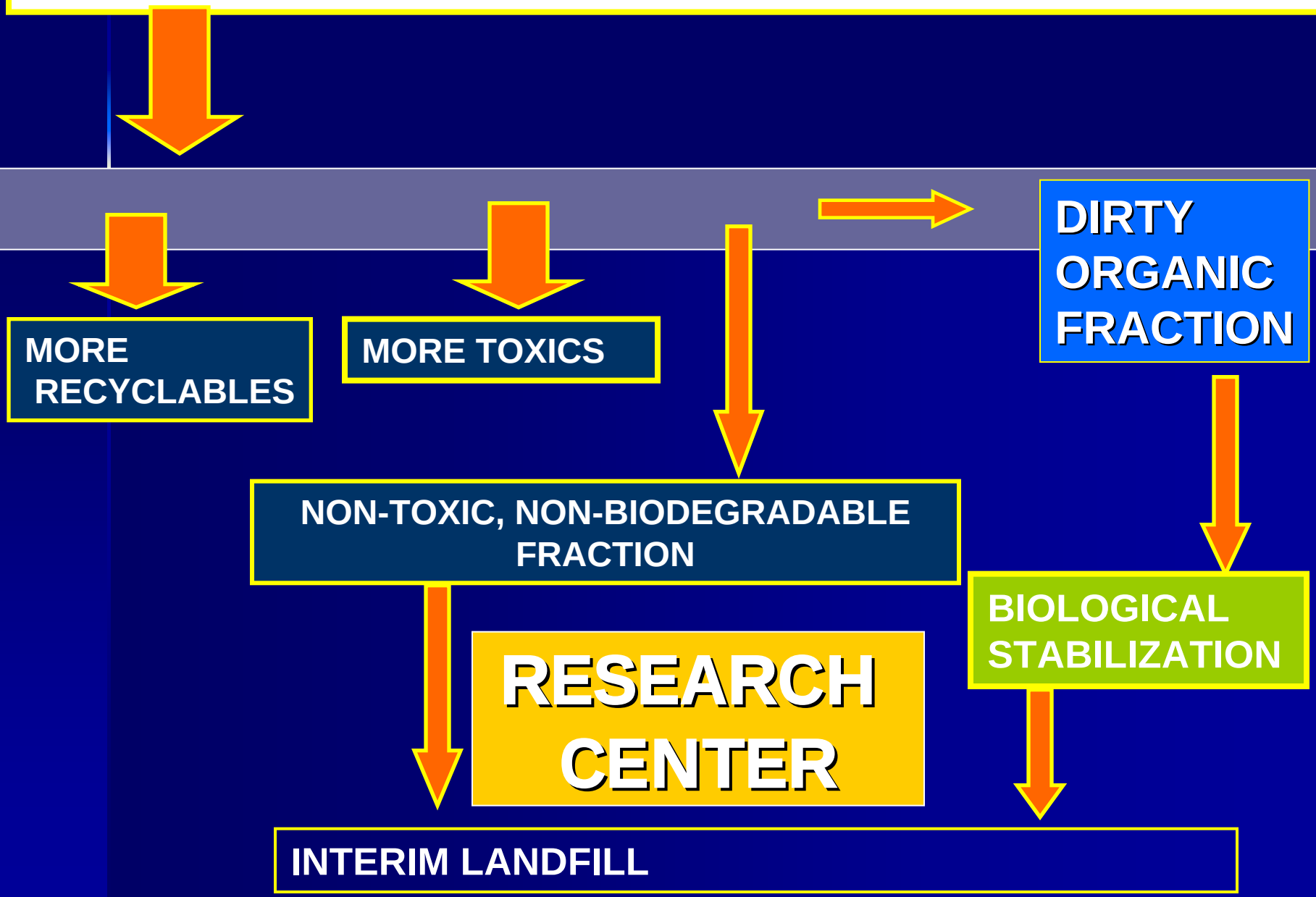
- 1. Built at entrance to landfill
- 2. No material can enter landfill without it being separated and screened
- 3. Toxics removed and identified
- 4. Dirty organics biologically stabilized
- 5. Non-recyclable materials STUDIED

Nova Scotia, Canada

- Has already built Residual Separation Facilities in front of their landfills to remove more recyclables and stabilize the dirty organic fraction before landfilling.


RESIDUAL SCREENING FACILITY
MORE RECYCLABLES
MORE TOXICS
DIRTY ORGANIC FRACTION
Operating in Nova Scotia
BIOLOGICAL STABILIZATION
INTERIM LANDFILL

RESIDUAL SCREENING & RESEARCH FACILITY



RESIDUAL SEPARATION & RESEARCH FACILITY

NON-RECYCABLE MATERIALS

Local University

Or Technical College

RESEARCH CENTER

RESEARCH CENTER

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

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!

- The Residual Separation and Research Facility
- Is where
- The Community
- Must drive
- Industrial Responsibility

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
- We cannot become sustainable without it

1. Source Separation

2. Door to Door Collection

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4. Recycling

5. Waste Reduction Initiatives

6. Reuse, Repair & Deconstruction

7. Economic Incentives

8. Residual Separation & Research Center

1. Source Separation

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5. Waste Reduction Initiatives

6. Reuse, Repair & Deconstruction

7. Economic Incentives

8. Residual Separation & Research Center

9. Better Industrial Design

1. Source Separation

2. Door to Door Collection

3. Composting

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6. Reuse, Repair & Deconstruction

7. Economic Incentives

8. Residual Separation & Research Center

9. Better Industrial Design

10. Interim Landfill

1. Source Separation

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2020

San Francisco

- Population = 850,000
- Very little space
- 50% waste diverted by 2000
- 63% waste diverted by 2004
- 70% waste diverted by 2008
- 72% waste diverted by 2009
- GOAL:75% waste diverted by 2010
- GOAL:100% by 2020 (or very close!)

Italy

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

Italy

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

Italy

- Villafranco d'Asti (Piedmont) has reached 85% diversion

Spain

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

U.S.

Island of Nantucket has reached 92% diversion

70 - 80%

COMMUNITY RESPONSIBILITY

8. Residual Separation & Research Facility

9. Better Industrial Design

2020

10. INTERIM LANDFILL

70-80%

COMUNITY RESPONSIBILITY

20-30%

INDUSTRIAL
RESPONSIBILITY

2020

10. INTERIM LANDFILL

Industrial Responsibility

- 1. Design for sustainability
- 2. Clean production
- 3. Extended Producer Responsibility

E.
From Zero Waste to Sustainability

To move from Zero Waste to Sustainability we must use the wisest and brightest minds in industry, academia and society-at-large

Research Institute for Zero Waste and Sustainability

Research Institute for Zero Waste and Sustainability

1)Research for better industrial design

Research Institute for Zero Waste and Sustainability

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

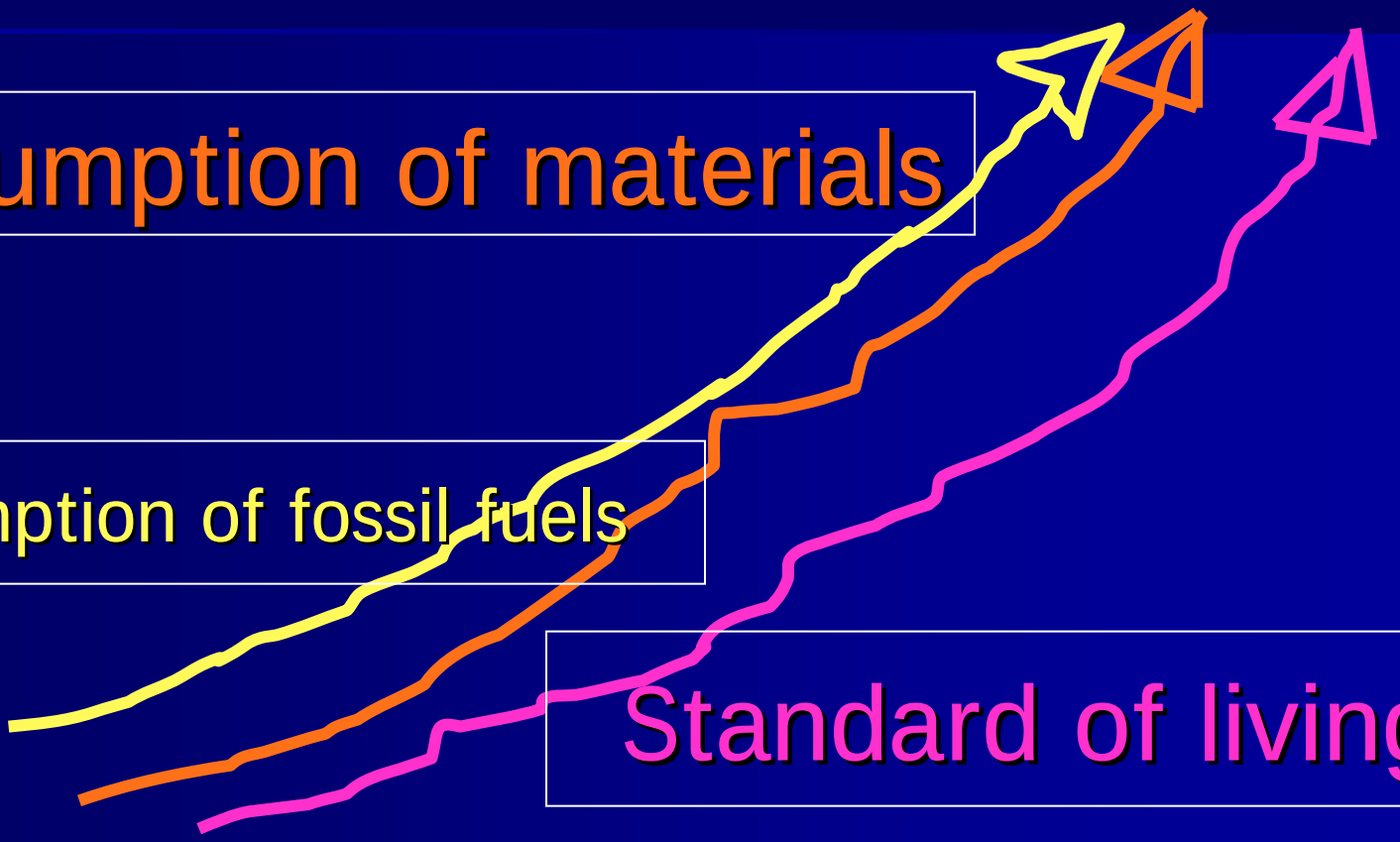

Sustainable Agriculture
Education For Sustainability
Sustainable Architecture
Sustainable industries & Jobs
Zero Waste 2020
Sustainable Energy
Sustainable Community development
Sustainable Economic development

F.
Back to the Big Picture

Current situation

Consumption of materials

Consumption of fossil fuels

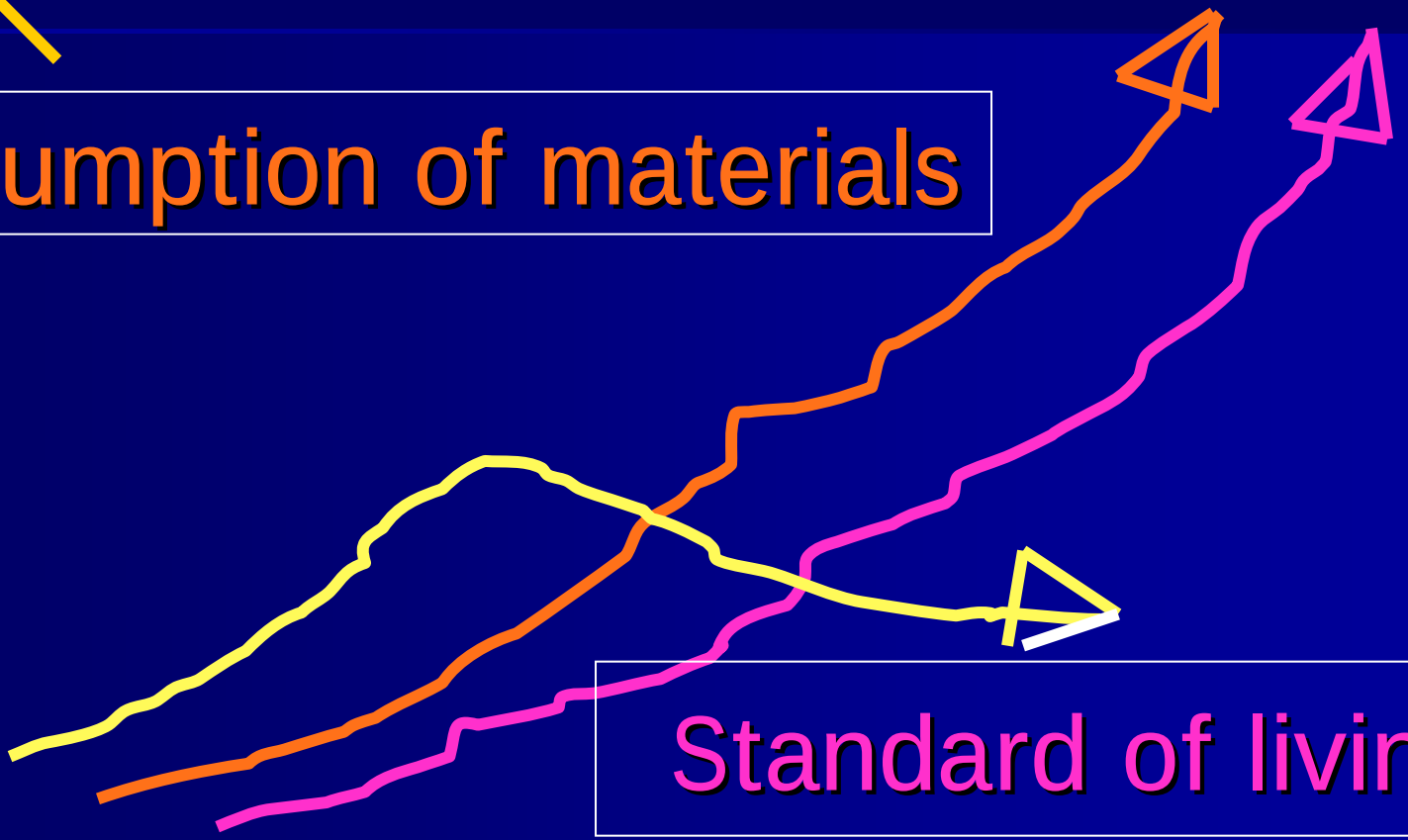


Standard of living

Change 1

Solar Energy

Consumption of materials

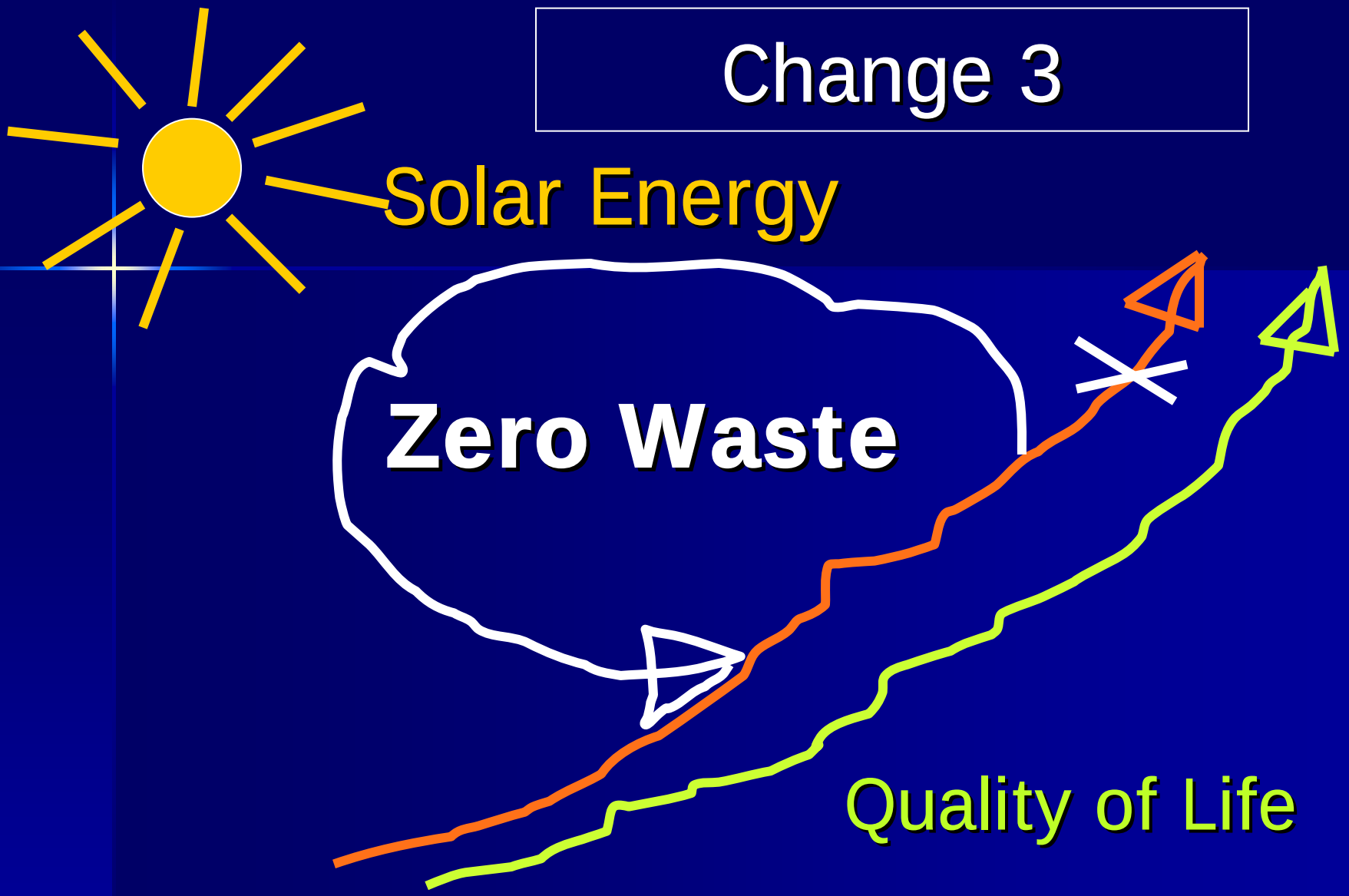


Standard of living

Change 2

Solar Energy

Change 3



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

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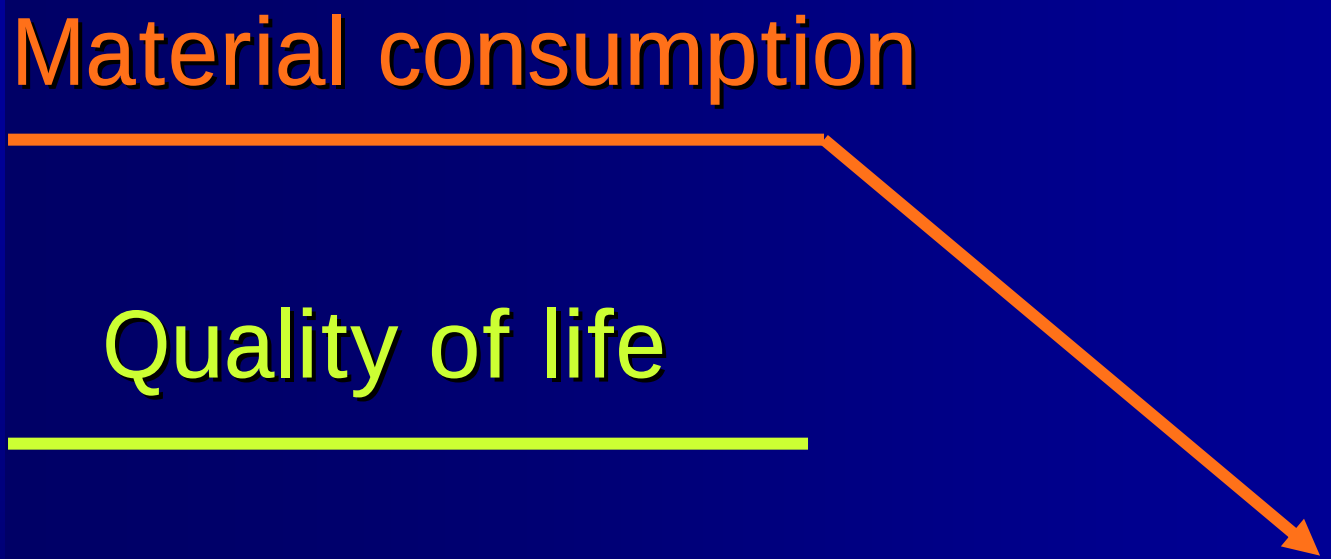

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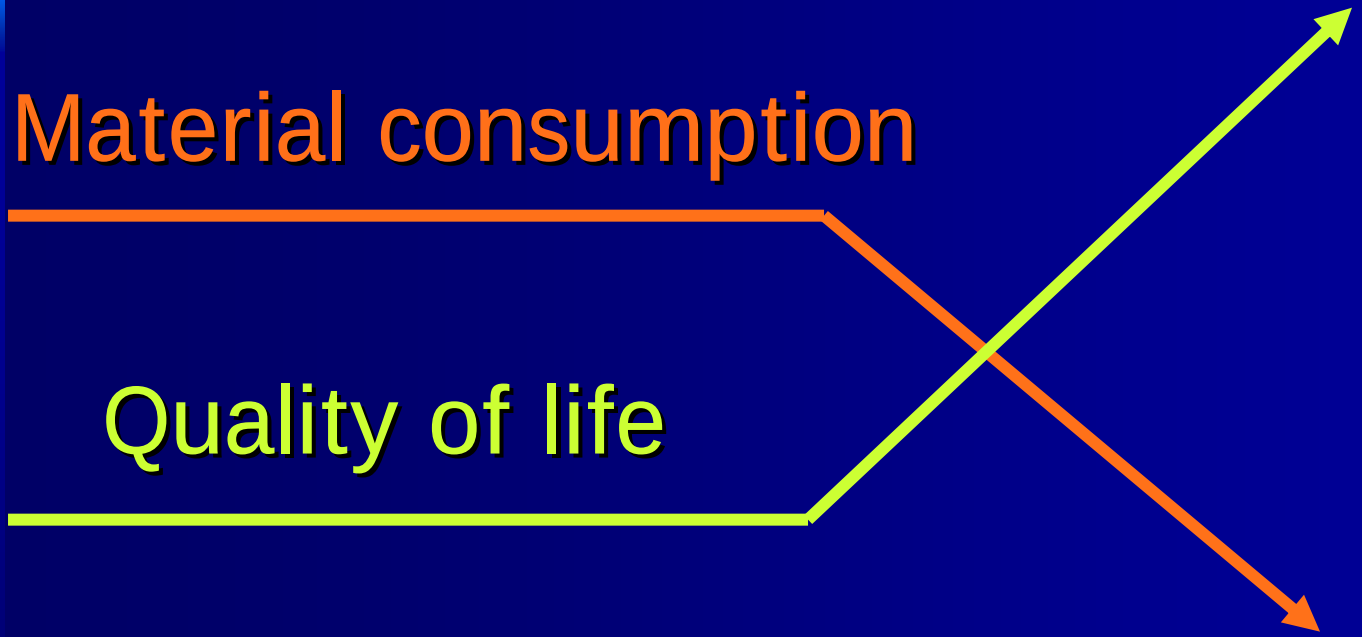

To fight over-consumption

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 Friends, Not Waste"

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,
- Better for our children, and
- Better for the planet (MORE SUSTAINABLE)!