All my life I've been just throwing stuff away...

You mean it really was valuable all the time ...

Sorry

(Please. Don't feel guilty. We've all been doing it!)

It’s not Waste
It’s a resource
!!

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CONTENTS OF THIS TRUCK
GO TO LANDFILL
QUEENSTOWN
LAKES DISTRICT
COUNCIL
Airwaste

Not This…….


Dump it – Next generation's problem !
Odour, vermin, ground subsidence & GHG's

The result of methane migration and explosion

Loscoe Landfill, UK, March 1986. House totaled, no deaths

- **But what <u>can</u>**

I

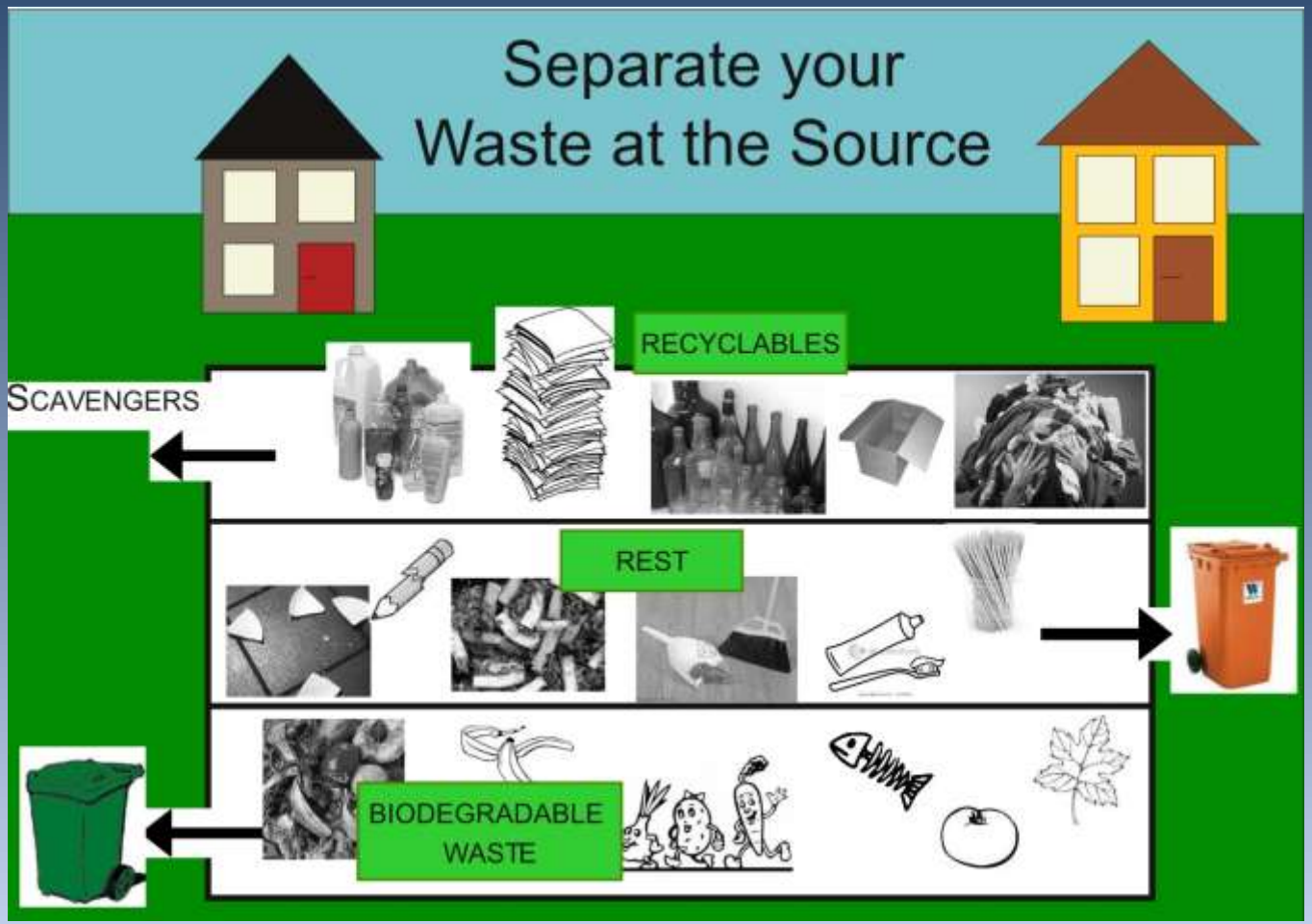
do with the waste?

Separate it at source

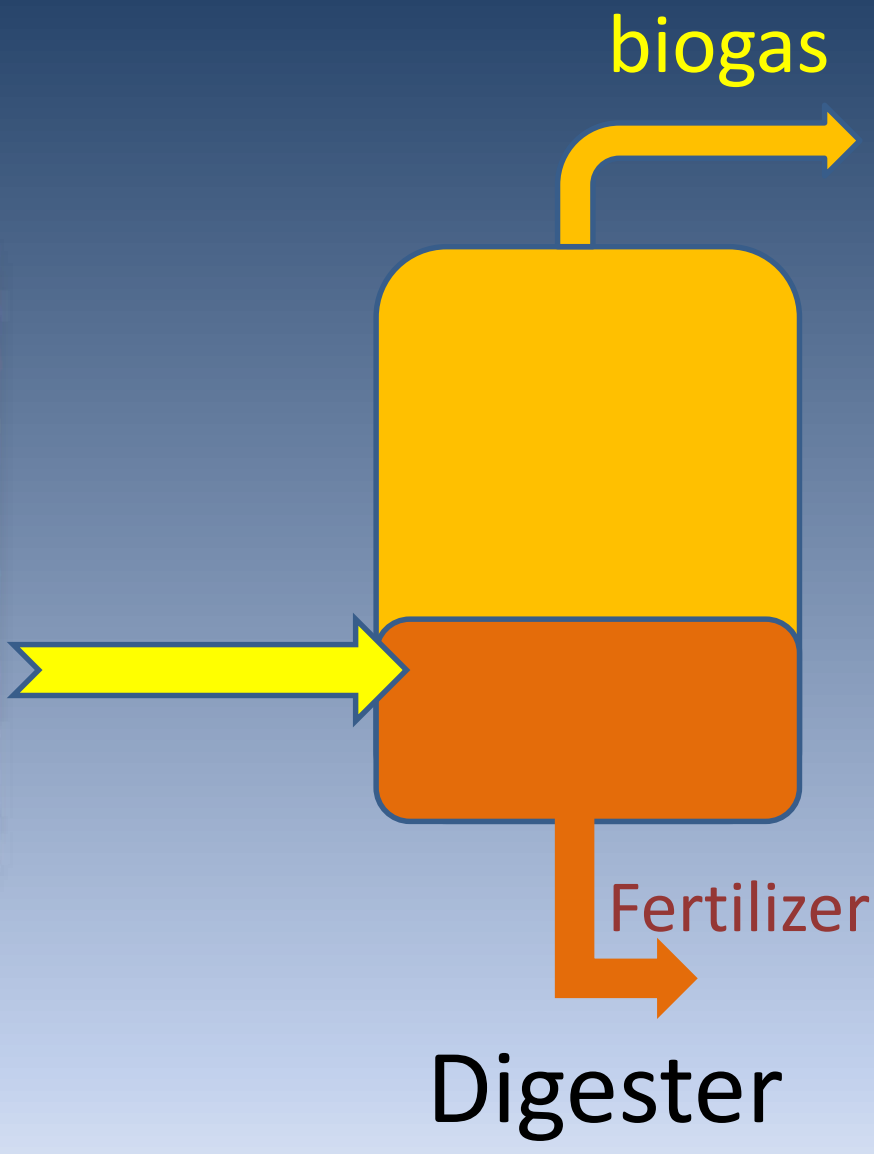
Zimbabwe

FROM June 1 onwards, all households in Kuala Lumpur, Putrajaya and several other states were required to separate their waste at source.

Vietnam 2012

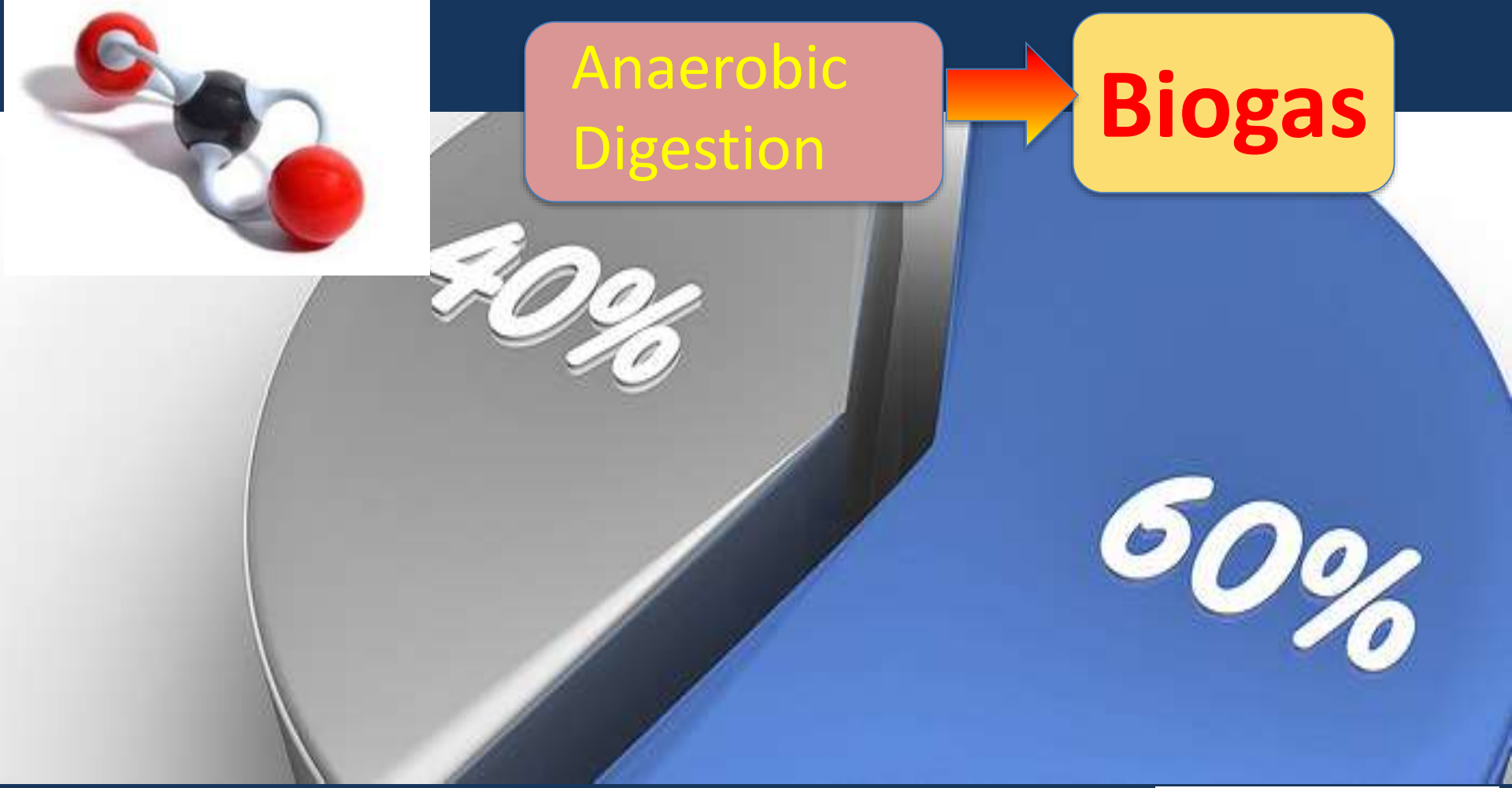


Separated biosolids to Digester



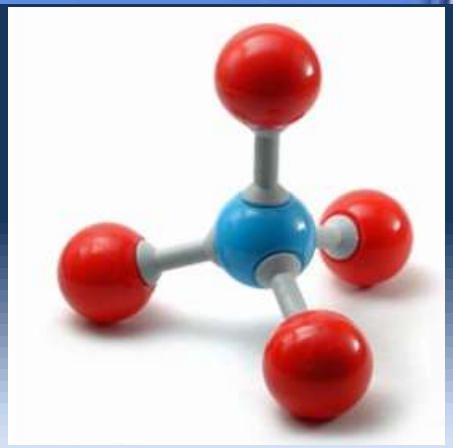
Anaerobic Digestion

Biogas



40% carbon dioxide

60% methane



Biogas use:

Simplest: **Burn it**: Boiler, drying, domestic fuel

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Other Uses: **Plastics** *(Newlight Technologies)*

Good Fertiliser

N + P + K

Challenges?

- **Inertia:**
  - Unwillingness to move out of the comfort zone
  - "We are all right" *Motivate !*
- **Lack of vision**
  - look to the future, see the bigger picture and the possibilities *Educate*
- **Logistics**
  - Infrastructure mostly there already. *Chch & Timaru*
- **Low energy prices** (low feed in tariff)
  - Most economic with "post metering" supply
- **Capital costs**
  - 3 to 7 year payback

Examples
Camellia, Sydney

- 50,000 ton per year food waste including liquid and packaged food.
- Producing 3 Mega watts electricity, dried fertilizer pellets and treated water.
- plus a skip of knives forks and spoons and one of plastics periodically.

Tasmania

- Expanding dairy plant
  - Regulatory discharge limiting conditions
  - AD used to treat the bulk of the waste
  - Biogas used to replace up to 30% of the petroleum gas presently used by the factory as boiler fuel

Bromley (ChCh) Waste Water Treatment Plant

- Digesters converting waste sludge into biogas
  - Gas used to generate electricity. Plant virtually energy self sufficient
  - Surplus gas piped into the CBD and used to generate electricity for the Council building, but also uses the waste heat from the generator engine to heat and **COOL** the building in summer.

Palmerston North WWTP

- Recent process upgrade

  -More than doubled processing and biogas output for electricity and heat

  - Extra capacity used to process local food waste and provide gate fee revenue.

  -Self sufficient in electrical energy

  -Providing ETS credits for the city

Tirau Dairy Plant, NZ

- On site, in ground biogas digester
- Long established
- Why not more?
- Build into new plants like Lichfield?

Next Steps?

- Map industry waste resources by location, type, annual tonnage and seasonality
- Set up biogas digesters to convert the organics
- Educate the public. *Most are ready for it*
- Research: University & polytech doctorates and research to improve processes & markets

Next Steps?

- Publication of GHG targets and reductions region by region on per head basis at yearly intervals
- Refocus of Government direction to stimulate NZ GHG reduction and re-use of waste resources
- Common policy for both Government and private institutions

An opportunity ?

- Development of local biogas digester treatment centres with or near baseline waste providers and sources identified in resource mapping, eg dairy companies, food manufacturers and agricultural sources
- Open to all
- Gate fees competitive with landfill gate fees
- Biogas sold to highest bidder, but also available to baseline provider industry/s
- Fertilizer sold wet, dry or pelletized