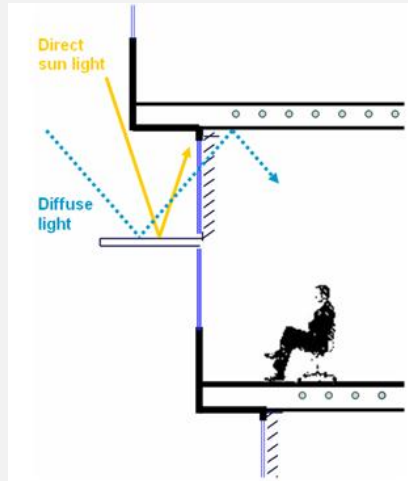
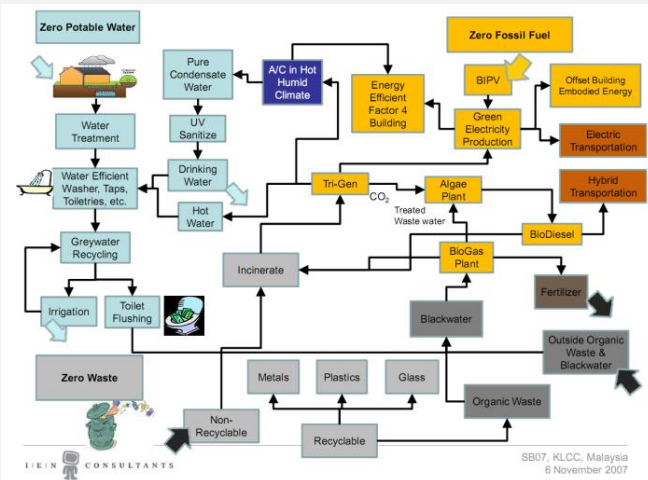


Sustainable Communities in Tropics The Only Way Forward



CK Tang

IEIN Consultants
Kuala Lumpur, Malaysia

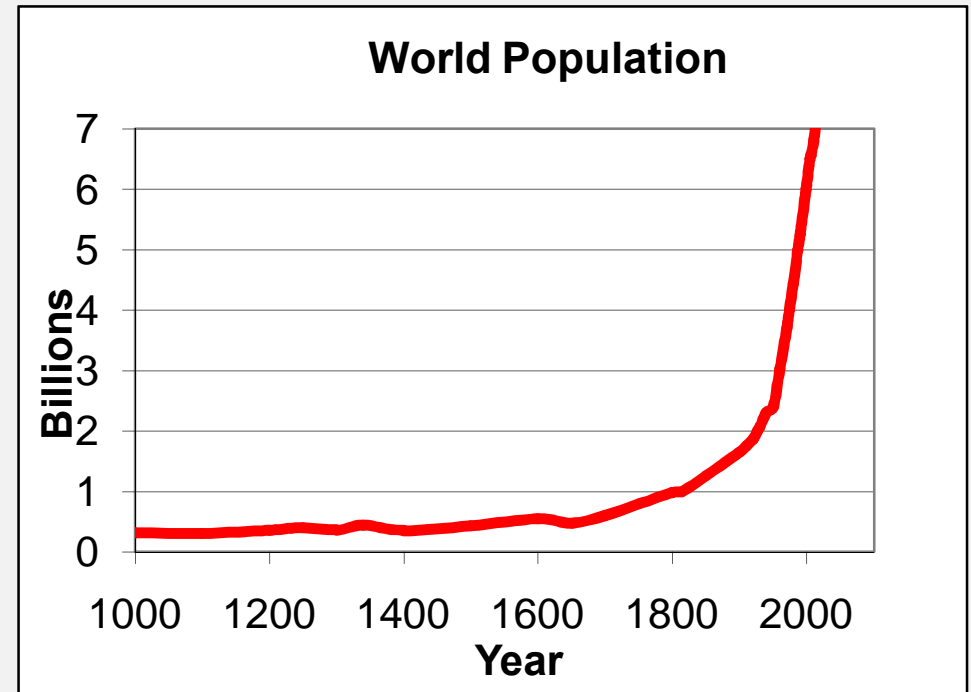
The Only Way Forward

“ Climate Change

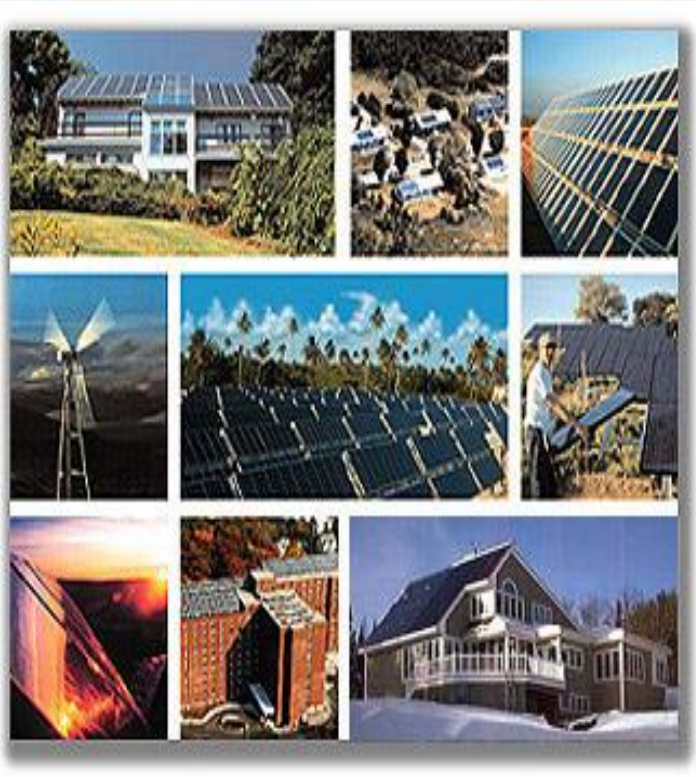


100m Sea level increase

“ World Population Growth



Is A Truly Sustainable Community Possible? Using Known Technologies Today?

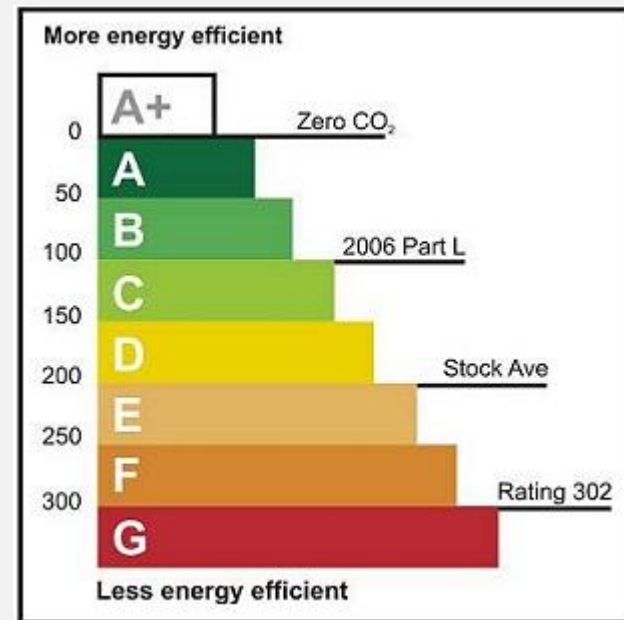


- “ Zero use of fossil fuels?
- “ Zero potable water use?
- “ Zero waste?
- “ Zero carbon embedded material use?

While improving the followings:

- “ Indoor environmental quality
- “ Quality of local environment

Energy Efficiency



Energy Efficient Tropical Buildings



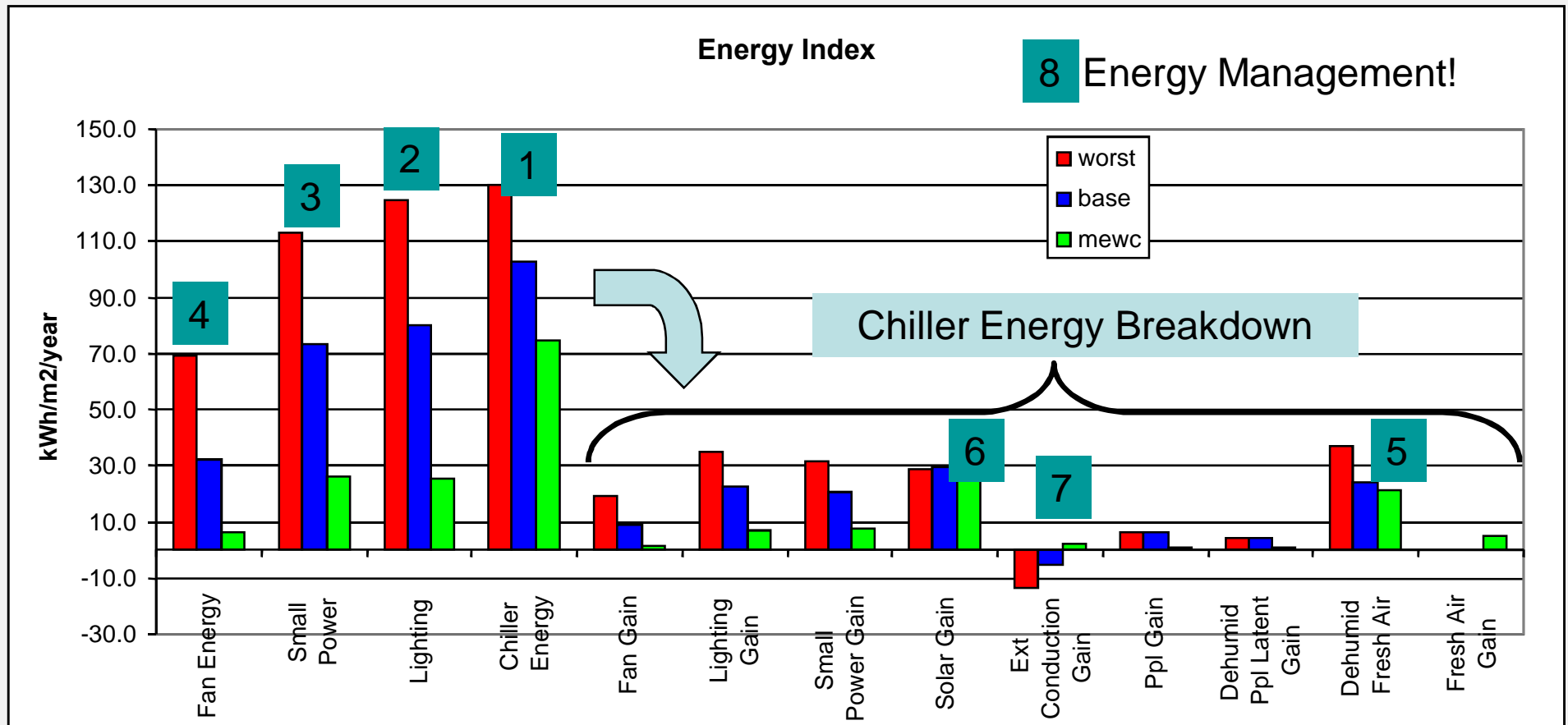
Low Energy Office . Ministry of Energy, Green Technology and Water, Malaysia.
BEI ~ 100 kWh/m²/year
50% Energy Saved using Conventional Best Practice Technology



Pusat Teknologi Hijau Malaysia, Bangi,
BEI ~ 70 kWh/m²/year
65% Energy Saved (excluding BIPV)
~100% Daylight use in Building

Lesson Learned

8 Steps for Energy Efficient Tropical Buildings



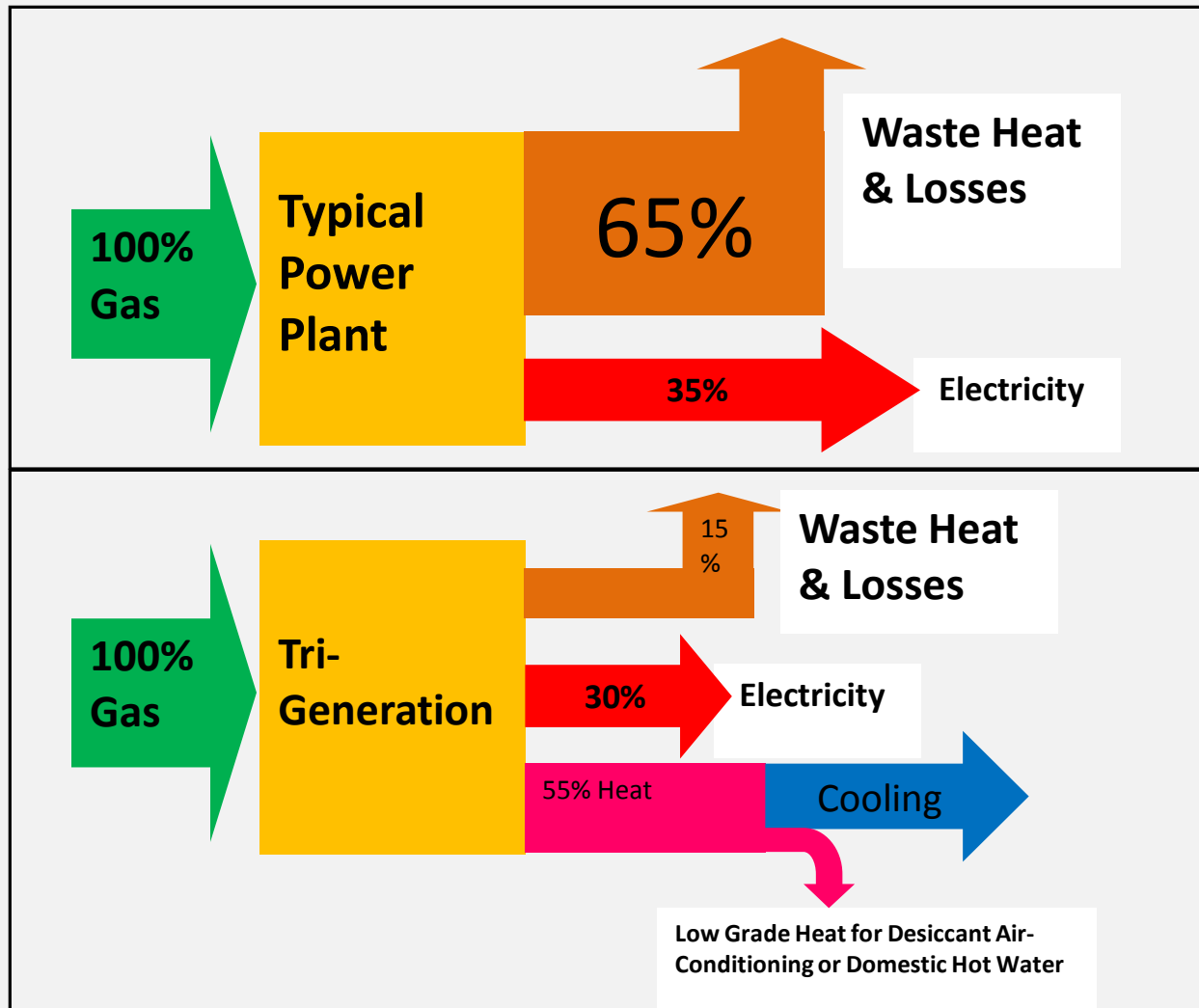
Factor 4 Buildings

- “ Buildings that consume only 25% Energy as compared to conventional buildings today . i.e. 50 kWh/m²/year.
- “ Achievable by Energy Efficient Building with
 - . Tri-Generation or
 - . Solar Air-Conditioning or
 - . 100% Daylit Building

Green Energy



Tri-Generation or Co-Gen

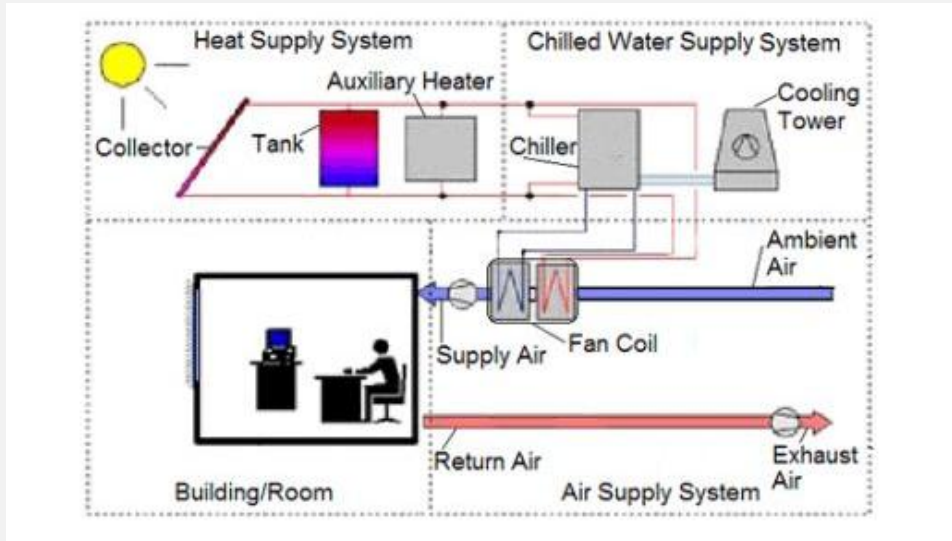


Conventional Power Generation

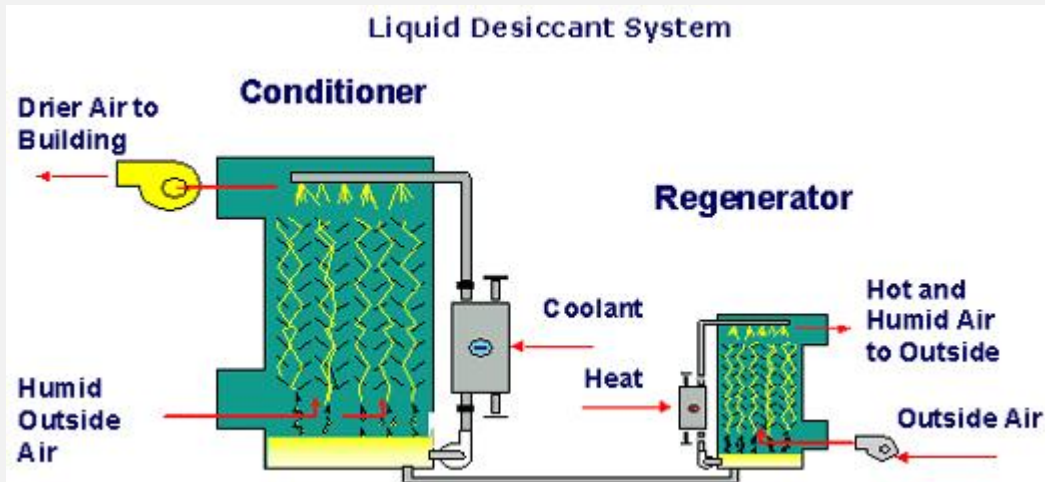
A Tri-Generation System

Solar Air-Conditioning

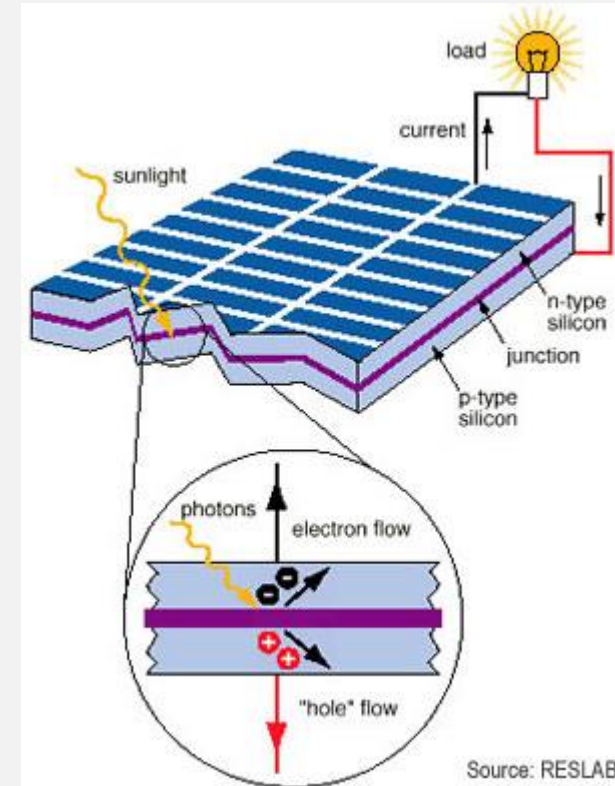
Using Absorption Chillers



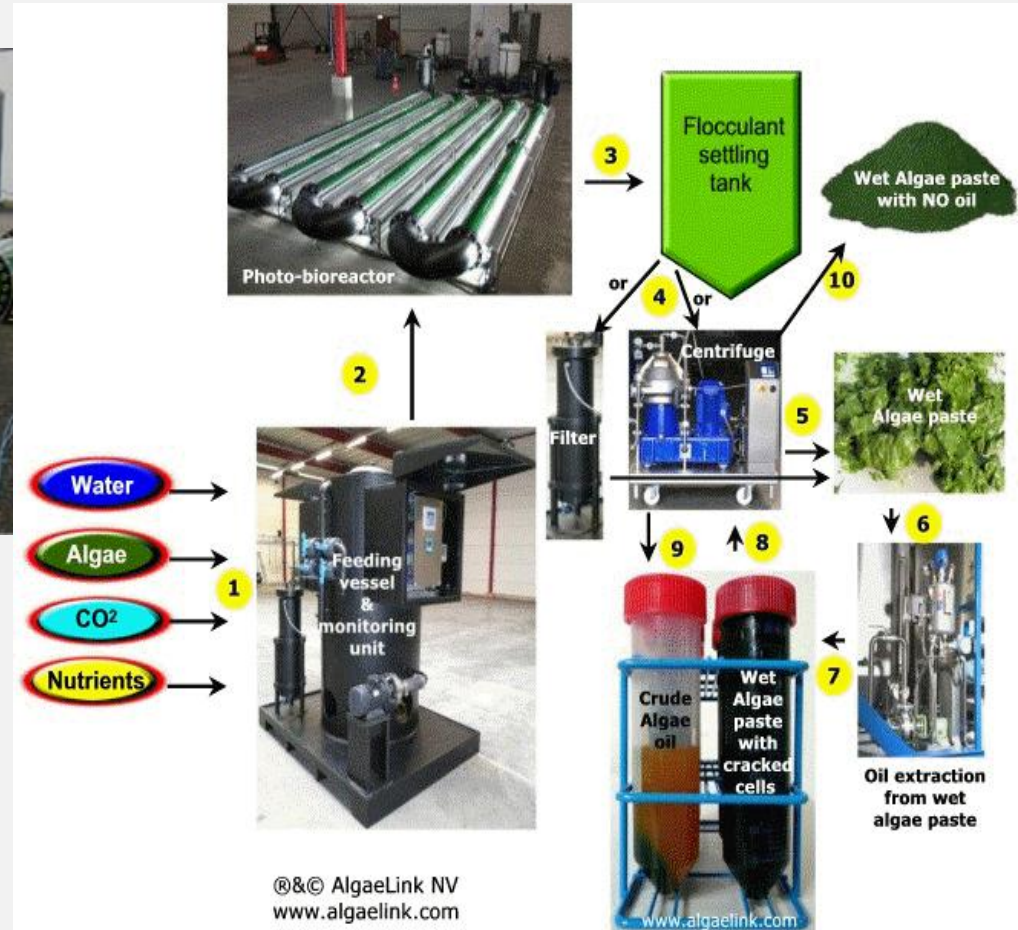
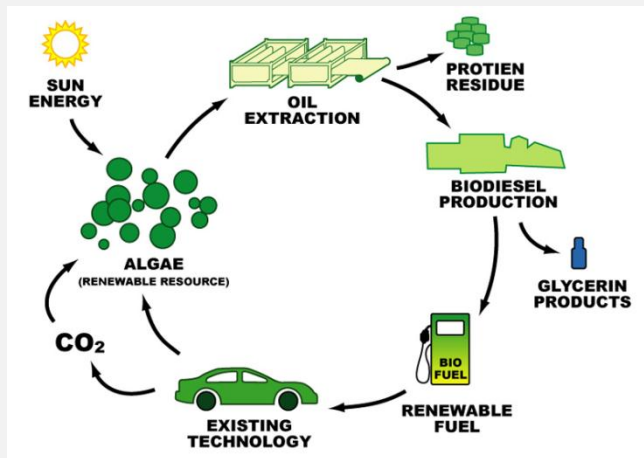
Using Liquid Desiccant



Building Integrated Photovoltaic



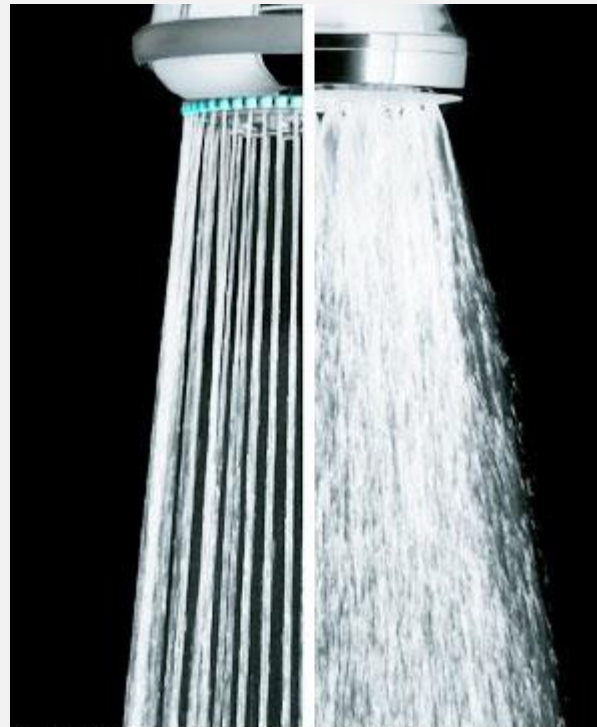
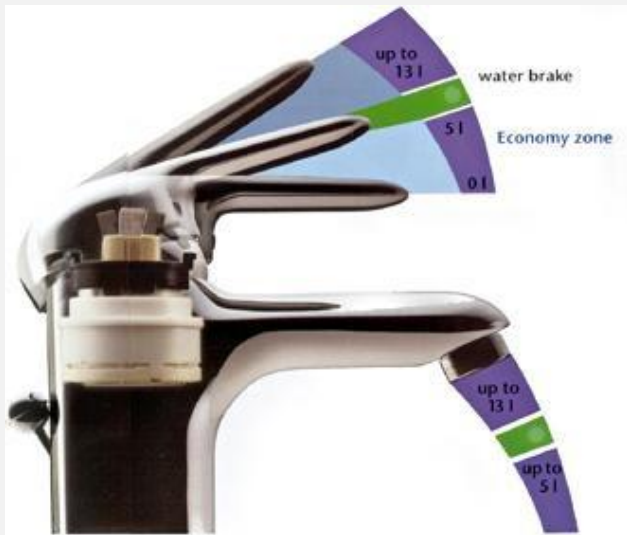
Algae . Renewable Energy



Water Efficiency



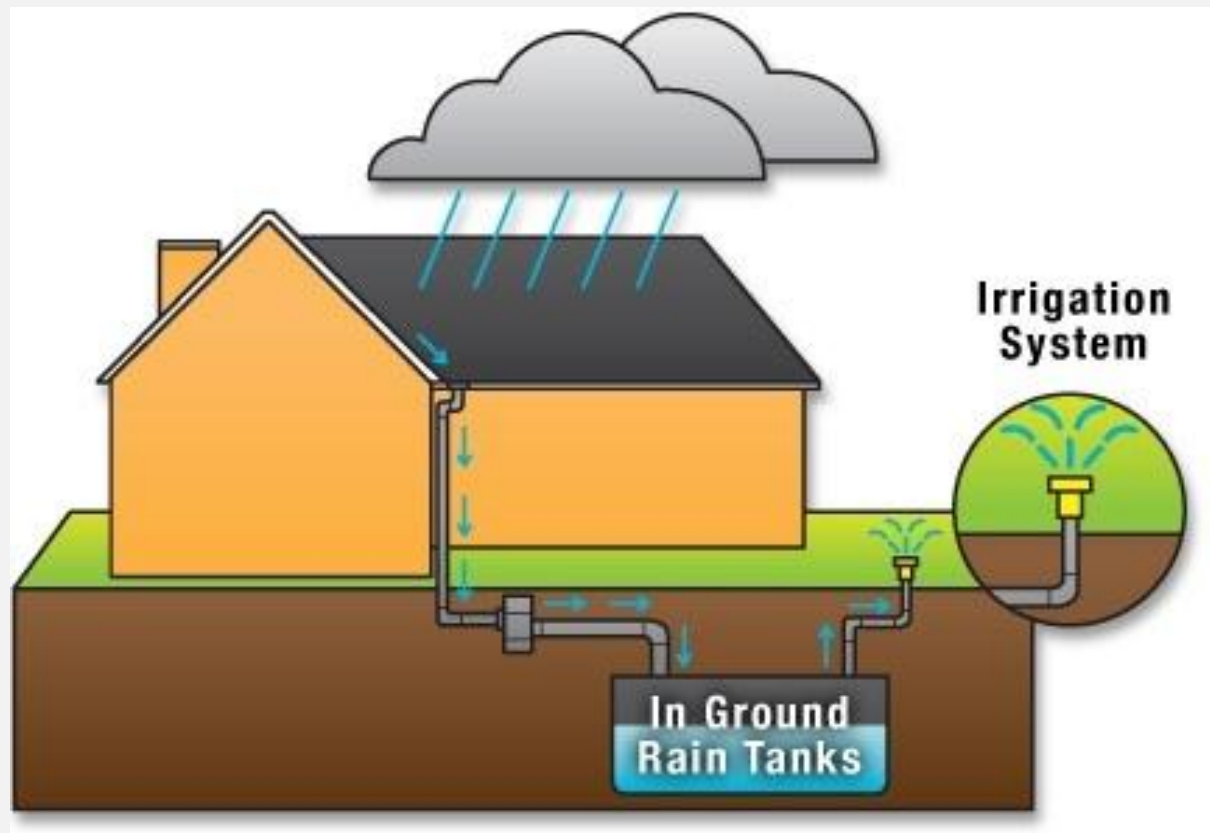
Water Efficiency



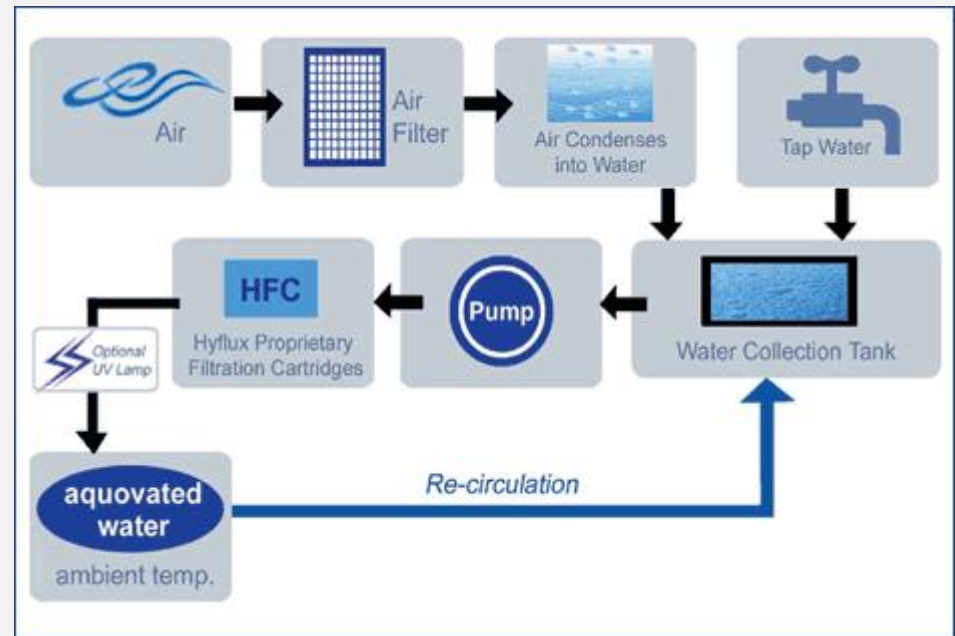
Conventional shower spray Satinjet shower spray



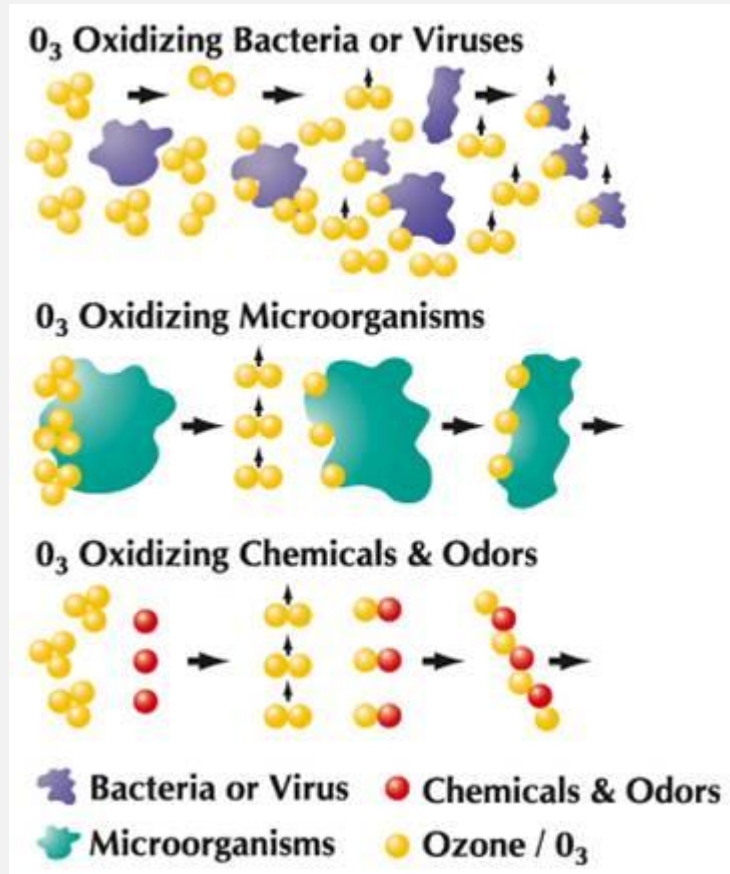
Rain Water Harvesting



Air to Water



Ozone or UV Water Treatment



Waste Minimisation

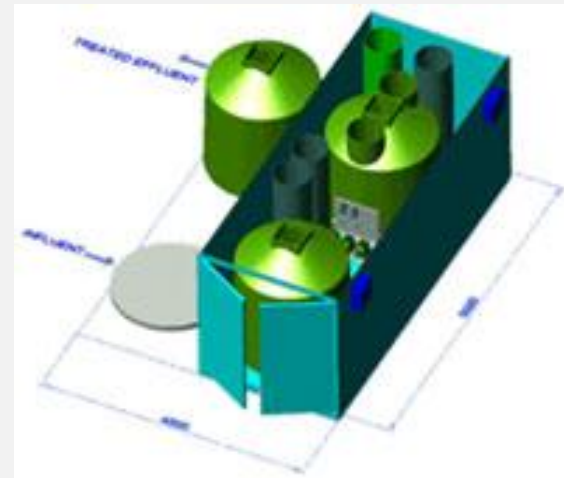
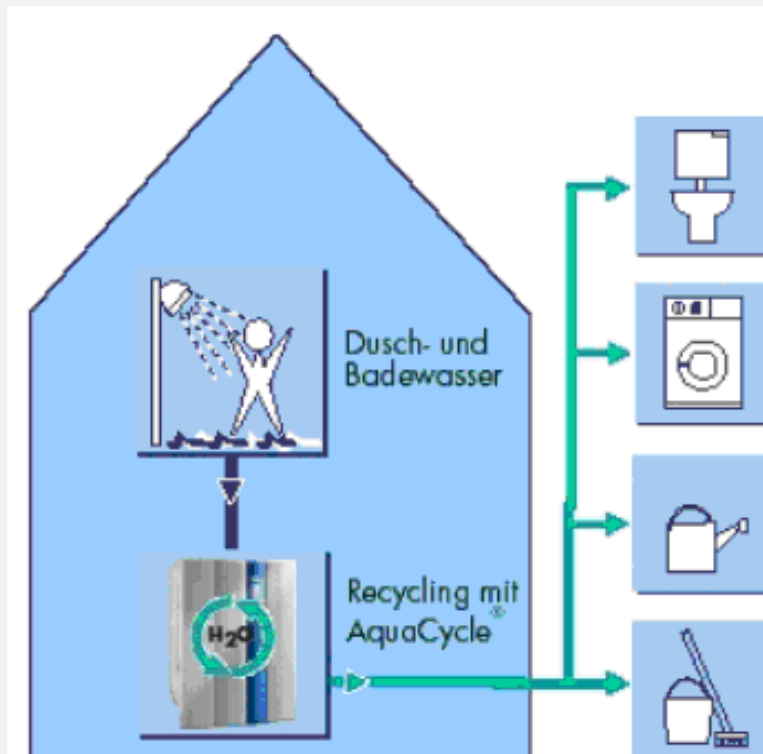


REDUCE, RE-USE, RECYCLE

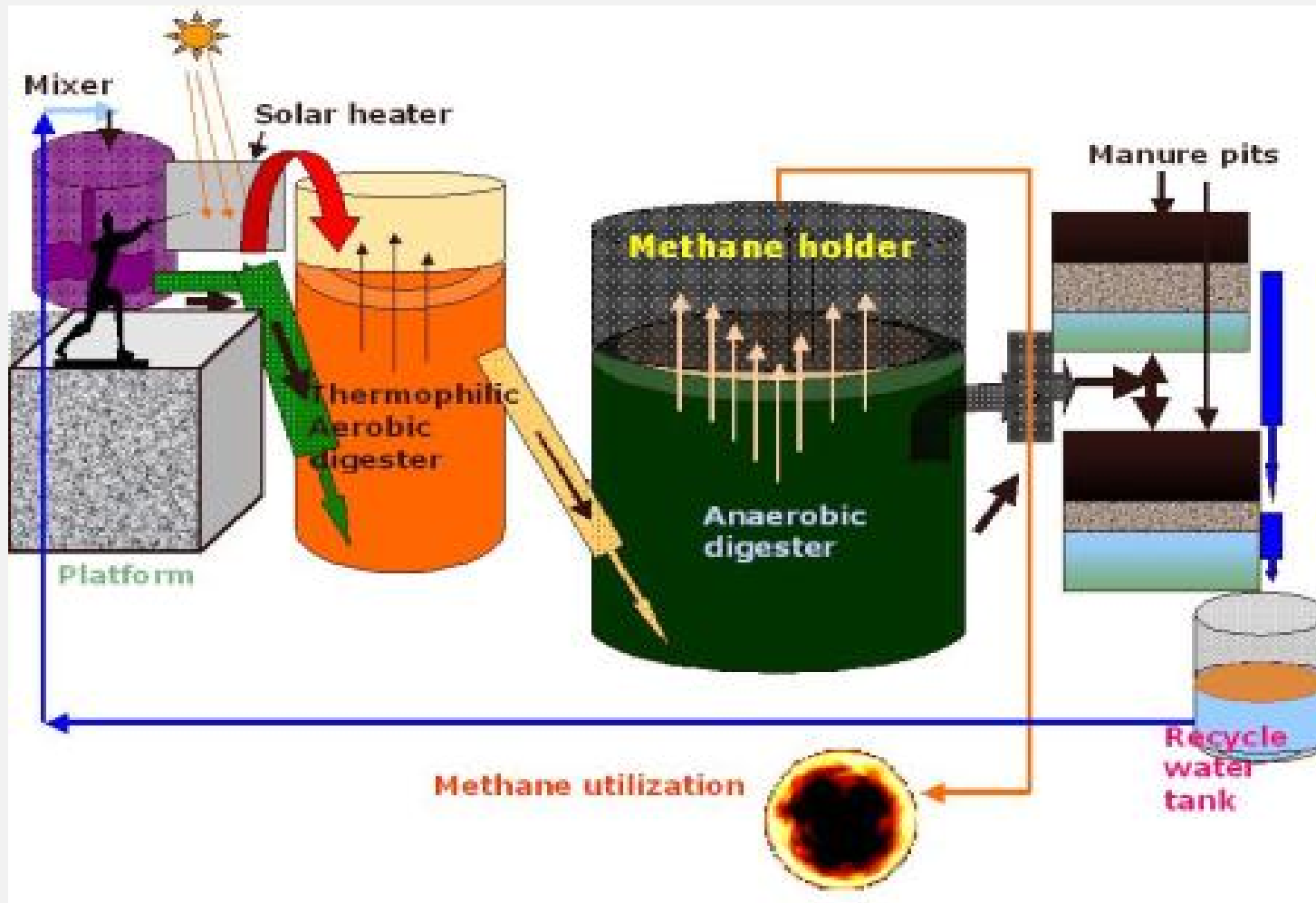
- “ Metal, Plastic, Paper . Recyclable
- “ Organic waste . Compost it!



Grey & Black Water Recycling

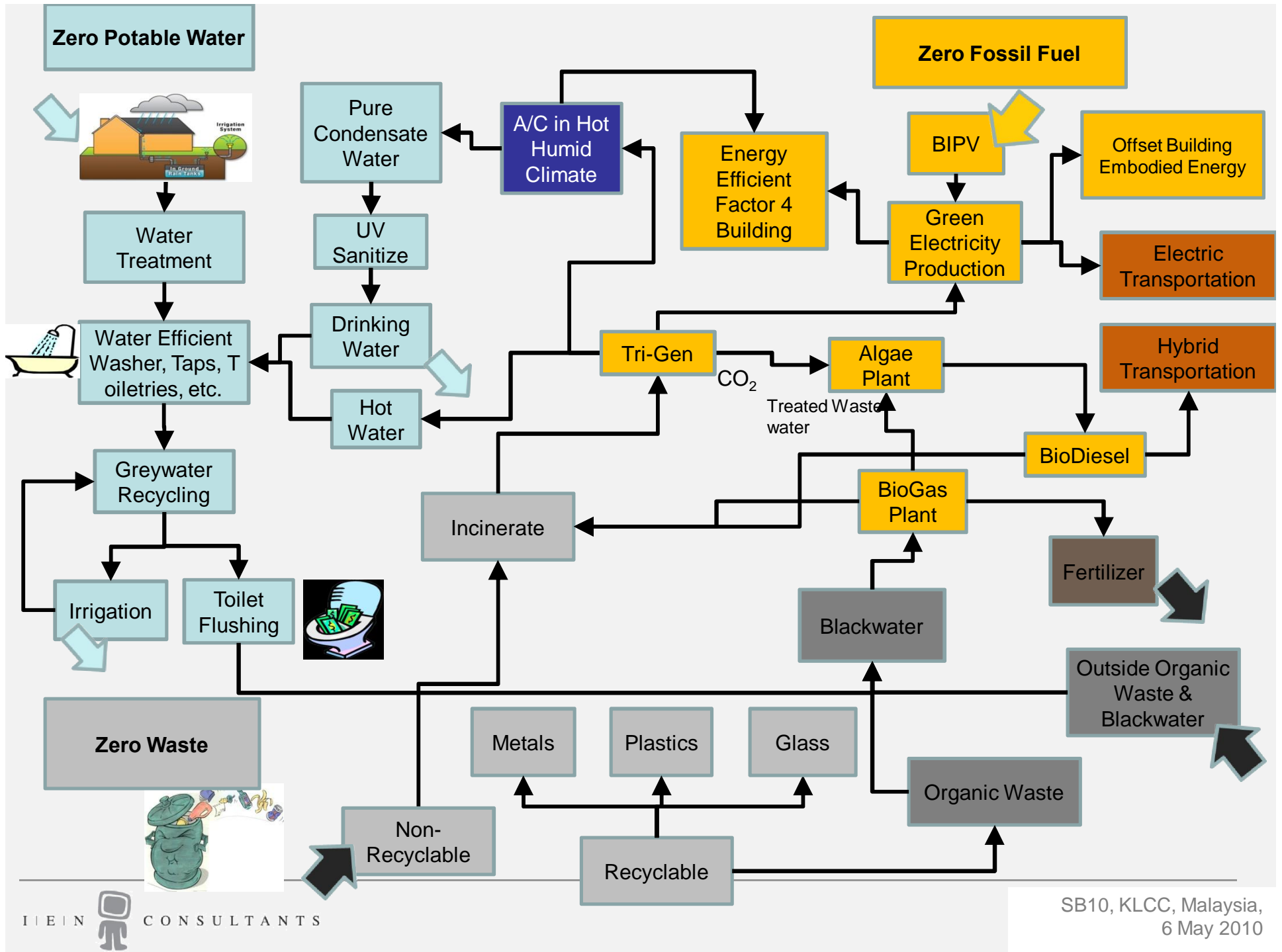


BioGas . Renewable Energy



The Roadmap





Thank You!

ck@ien.com.my
www.ien.com.my