Inclusive Development & Appropriate Technology

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Definition?

- **Inclusive Development vs. Exclusive**
- **Sustainable Development vs. Unsustainable**
- **Appropriate Technology vs. Inappropriate**

Triple Bottom Line:

- Economic
- Environmental
- Social



Inclusive Development

Pursuing equal opportunities for

- Developing countries; Low-income households; The handicapped; Women and children; ...

to get accesses to

- Basic needs; Medical services; Education; Clean environment; Social welfare; ...

through

- Poverty reduction; Job creation; Capacity building; Technological improvement; Monetary aid; ...

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- **Independent not-for-profit association since 1986**
- **Inter/national R&D for sustainable development**
- **Implementation and Demonstration**
- **Consulting companies and governments**



Appropriate Technology Principles

- Low cost
- Locally available materials
- Labour-intensive
- Repairable by users
- Fostering creativity of people
- Socially and culturally acceptable
- …

→ All applicable for both developing AND developed countries

Basic Needs

Clean water



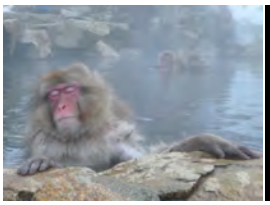
Safe and healthy food



Shelter



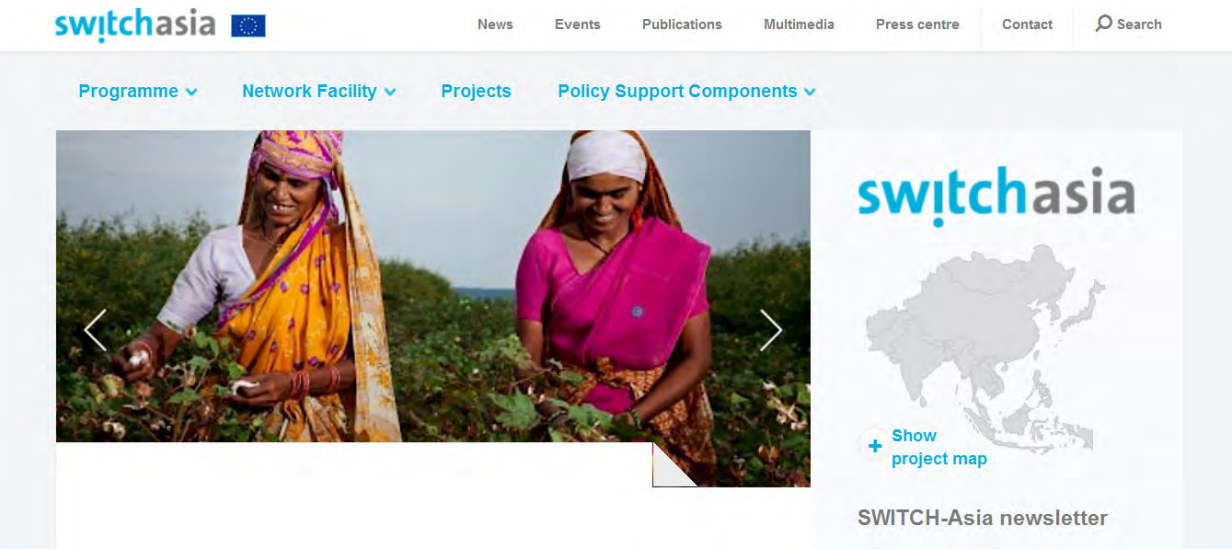
Energy services






Information and knowledge
And so forth…

Example of
Inclusive Development Programme





switchasia

www.ZeroCarbonResorts.eu

International Development

- Awareness raising (e.g. energy saving campaign, behavior change)
- Capacity building (e.g. Training of Trainers, academia)
- Technology/knowledge transfer (e.g. appropriate technology, maintenance, managment)
- Policy intervention (e.g. rules and regulations)
- Market creation (e.g. green technology, environmental consulting)

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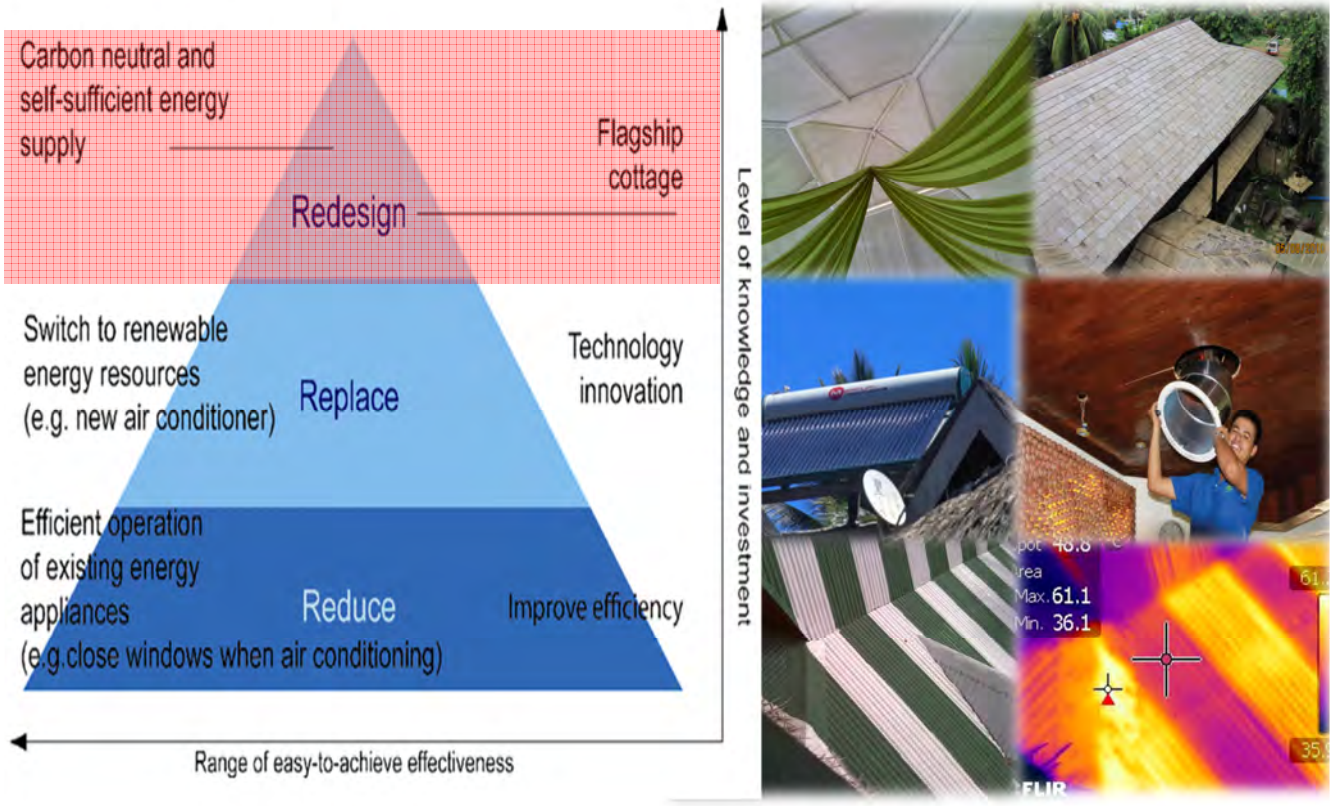
ZCR Approach



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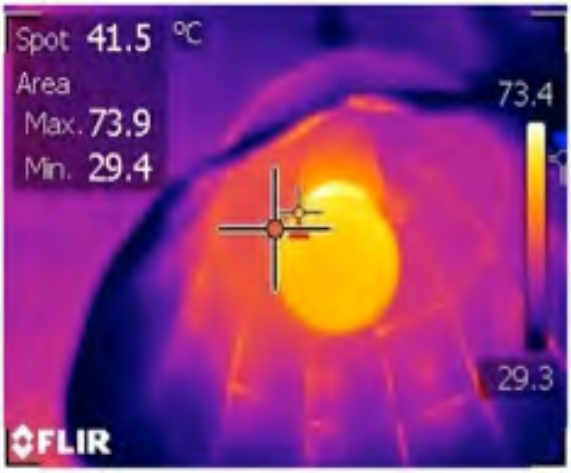
Incandescent bulbs are still being utilized. Incandescent bulbs are cheap but consume a lot of energy that it transforms into heat.





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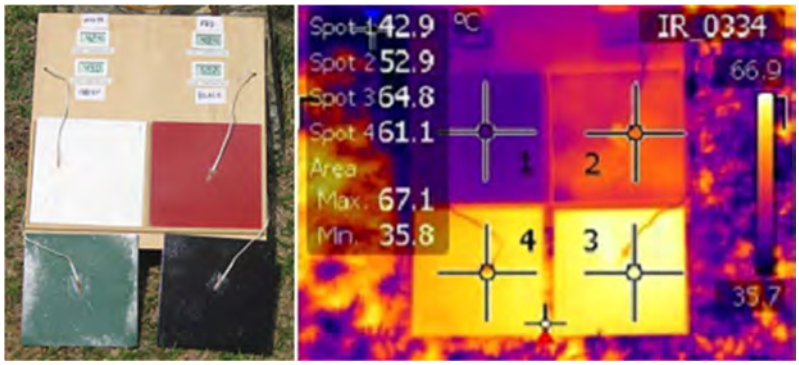
Light colored roofs = 'Cool Roofs Program"









Water metering





Sub-metering

Electricity supply and generation



Problem:
Disorganized wiring



Solution:
A licensed Electrical Engineer

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Waste segregation at source







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Other visibility collaterals

ZCR Banners – SME members
Green Technology Catalogue
Brochures 3 editions along the progress of the project
Guest Involvement forms
ZCR T-shirts and Pins
Giveaways at the ZCR conferences promoting energy efficiency: beverage insulator, quick drying face towels

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152 ZCR Project Members
Annual Savings Breakdown

ELECTRICITY
Php 176,380,238.13
17,712,979.20 kWh
9,014,365.36kg CO_2

FUEL
Php 30,888,990.07
1,776,737.73 L
2,846,008.36 kg CO_2

WATER
Php 33,842,926.51
476,824,036.43L

OTHERS
Php 765,988.70

Images courtesy of shutterstock.com & gograph.com

Energy Savings per year = 17,712,976.20 kWh

≈ 1,700 homes



= Equivalent Consumption of 41,870 homes

as per Approtech Asia (2005), one home consumes 423 kWh/yr

Water Savings per year = 476,824,036.43 L

≈ 150 homes



= Equivalent Consumption of 3,890 homes

as per LWUA Philippines (2005), one low income home consisting of 5 people consumes 122,275 L/yr

Fuel Savings per year = 1,776,733.73 L

≈ 100 cars



= Equivalent Fuel Consumption of 2,160 cars

as per EPA (2008), one car with a fuel economy of 8.2 L per 100 km and driving range of 10,000 km consumes 820 L/yr

Avoided Emissions per year = 11,860,373.72 kg CO_2

≈ 350 cars



= Equivalent Emissions of 5,640 cars

as per EPA (2008), one passenger vehicle emits 2,100 kg CO_2/yr

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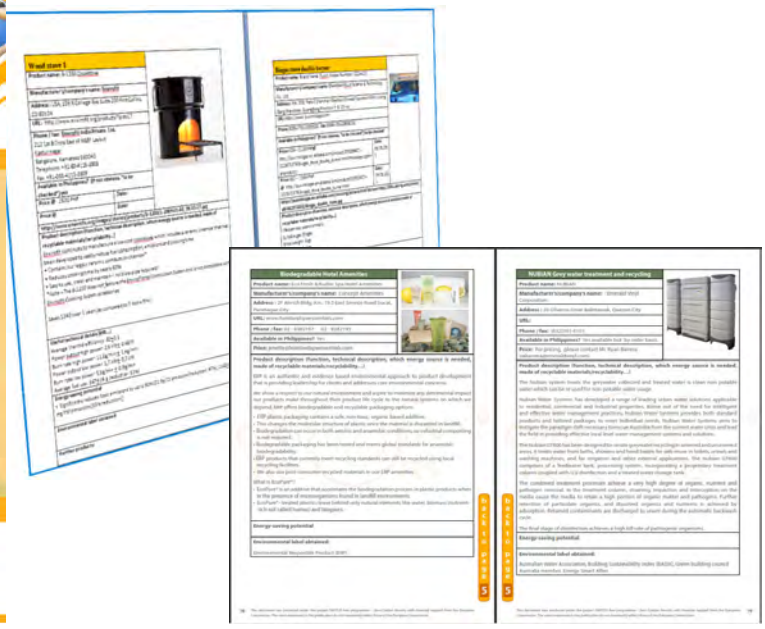
Green Technology Catalogue



- ❑ 72 green products and technologies
- ❑ 54 suppliers



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- Local Promoter's Training
- Appropriate Technology Workshop
- Replace Course
- FG Monitoring









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Appropriate Technology Examples

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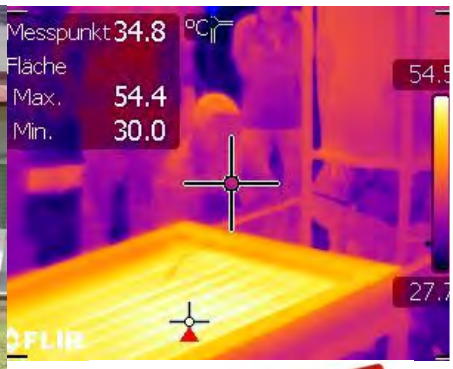
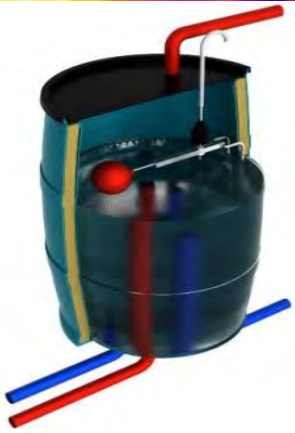
SOLAR WATER HEATER











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SME Members Adaptation of Appropriate Technology





In Sabang – For staff Use



In Port Barton – For Guest Use

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Winning Appropriate Technologies



ZCR Trainees
Won in National Competition
From Department of Science
and Technology



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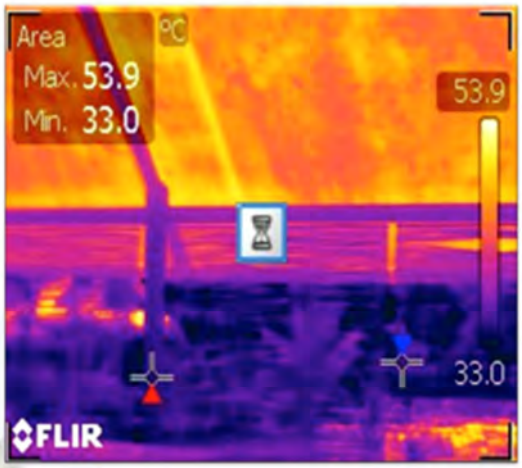
Evaporative cooling w/ re-circulated rainwater at Daluyon Beach & Mountain Resort







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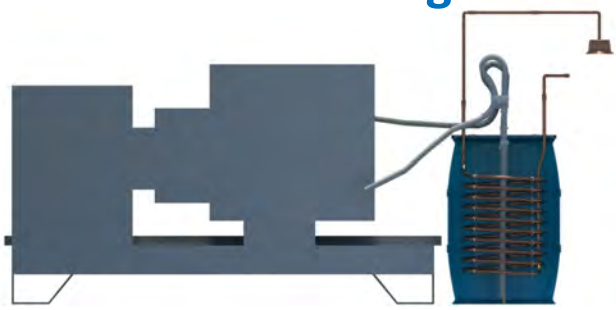
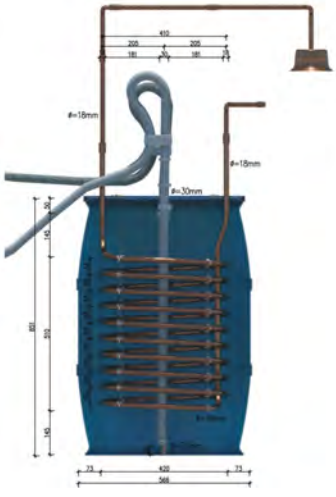
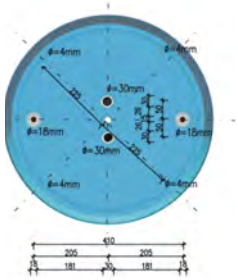
Heat Exchanger











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Inefficient and polluting traditional fuel wood cooking stoves.

Use improved cooking stoves that utilize less fuel wood & emit less smoke.













Improved Cooking Stove

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Project Funded by
switchasia
European Union, Switch Asia

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Project Fund
European Union, Switch Asia

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Solar Kitchen





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Cooking









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Simple Solutions for Daylighting









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Isang litrong liwanag





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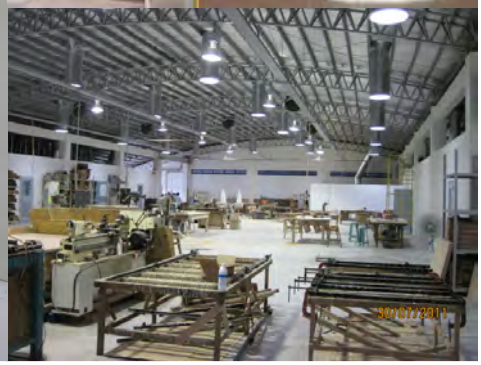
Solar tubular systems









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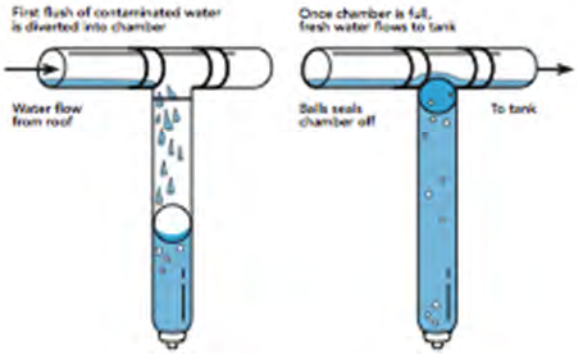
Rain Water Collection

First flush diverters, filtration system









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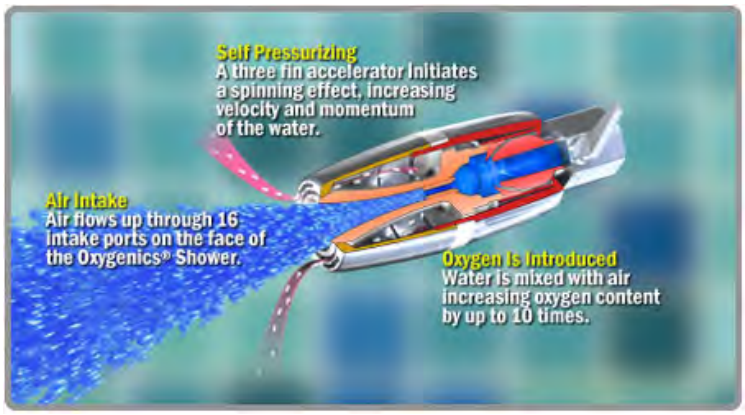
- Low flow shower heads
- Faucet aerators
- Waterless urinals







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- Garden wastes are put into grinding machine for composting and produce organic fertilizer.
- No burning of wastes.



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REED bed Technology









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- International Recognition of ZCR members
- ASEAN Green Hotel Award 2012-2014 (1 member) and 2014-2016 (3 members)



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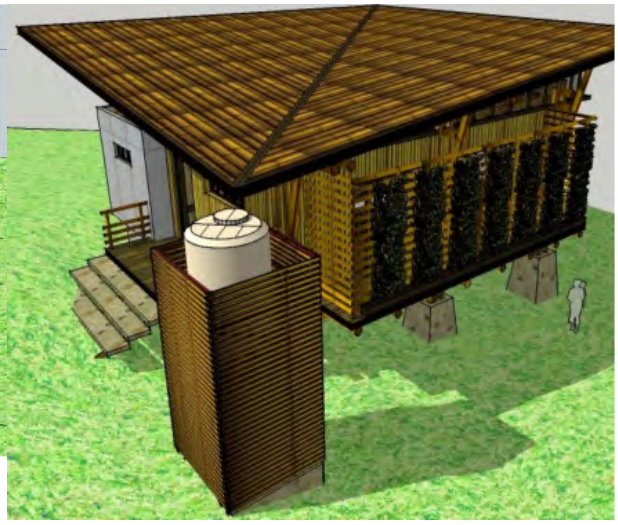
ZCR Showcase Cottage











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감사합니다.

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