Arch-Innovation

a

Climate Change Convenience



Manochehr Riahi

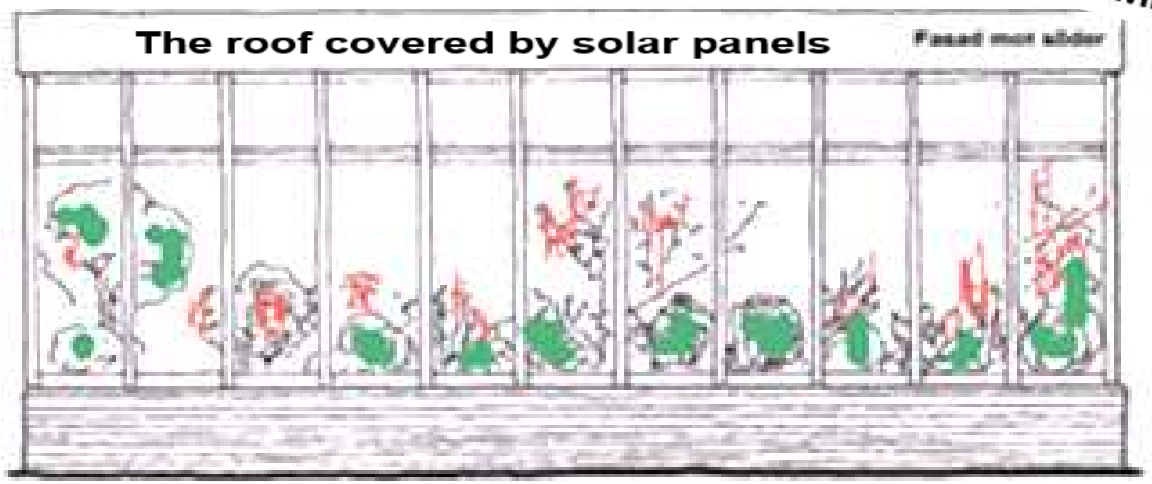
Architect

New high-rises buildings, without any opportunities for green living

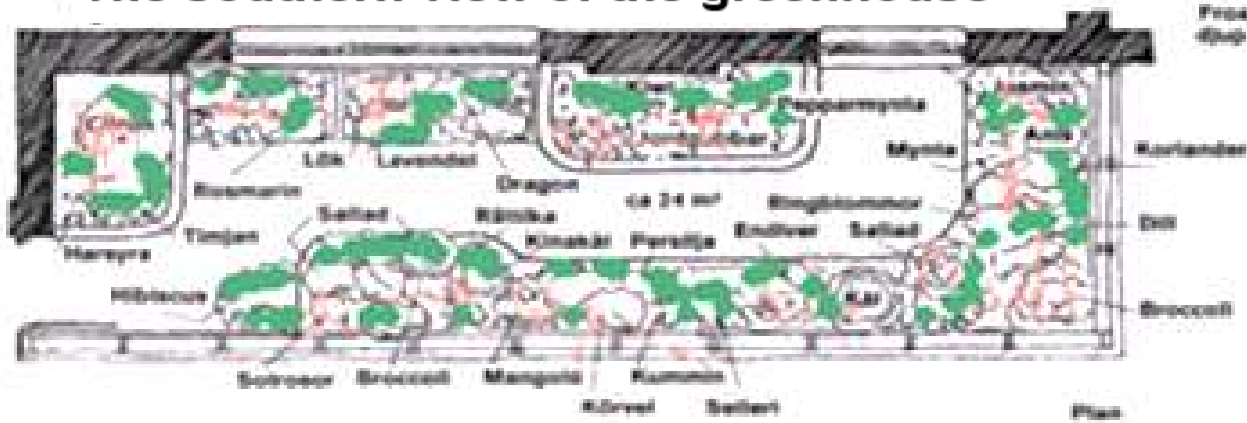
Answer to:

What will happen to
those who will stay in apartments,
how will they also get opportunities
to be in touch with the

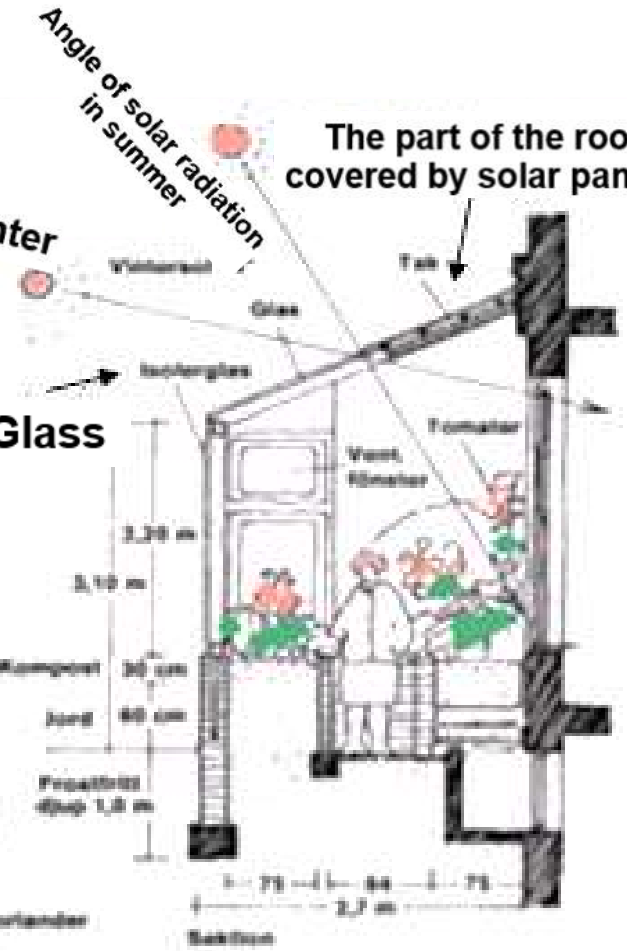
Nature?



The southern view of the greenhouse



An example plan of the Greenhouse
located at the south side of a Roof Garden

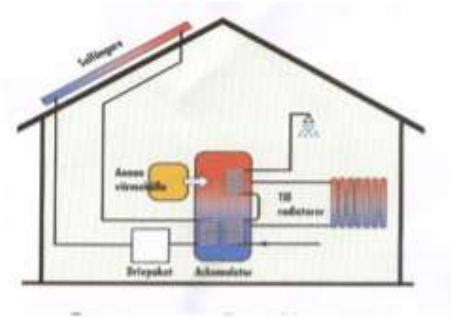


Vertical cut of the greenhouse

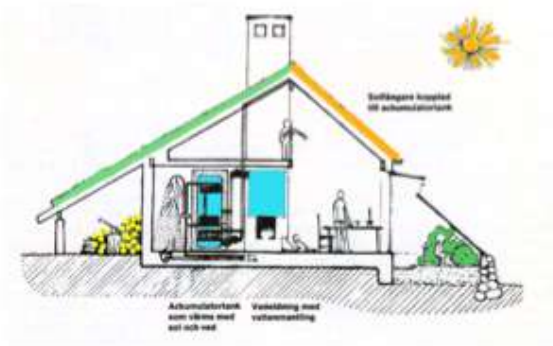
A practical experience conducted by Chalmers University

Green building designed and implemented in 1990s by Chalmers University

Greenhouse on the Roof



Chicago example



Living Roof-Garden

Farming on the Roof

Greenhouse on the Roof

The results of creating Living Roof-Gardens of residential complexes in collaboration with Residents in each neighborhood

Modifying the architecture of residential complexes to create a Greenhouse called Living Roof-Gardens and create plots of lands for each household. The greenhouse should be roofed with solar panels, with glass walls that can be opened on three sides: east, south and west. On the north side of the greenhouse, the wall should be insulated, and adequate spaces should be provided for the installation of the composting device and rainwater collection tanks, Living space for social meetings and the integration of the residents of the complex should be planned. Another action is to change the land use or, so called "Land Recycling" instead of using it only for grass, it should be planned for the optimal use of the land in front of the residential complex for using as recreational farming at the disposal of volunteer residents. Practical trainings should be planned through Residents related to each of the measures required by the Living Roof-Garden. The four main issues that will be implemented by the residents with support of Residents should be courses on:

clean water, soil, air and energy

The next item
and vital leading factor is preparing

Clean Water

for the Living Roof-Garden irrigation,
instead of using running water in urban drinking water pipes,

Using two cases based on the following logical reasons:

1- Collecting and using all Rainwater drops that can be recycled on the roof (without electric-pumps).

2- Recycling of Gray Wastewater from apartments to irrigate vegetables instead of lawns and help to irrigate in times of Non-Rainy Days (without electric-pumps).

The results of creating Living Roof-Gardens of residential complexes in collaboration with 13 CBOs in each neighborhood

Clean Water

- Collecting rainwater flowing from the solar panels covering the greenhouses on the roof
- Using collected rainwater for irrigation of Living Roof-Garden
- Basic modification of water and sewage piping in all apartments of the residential complexes
- Gray waste recycling of all apartments
- Significant reduction of water consumption in all apartments as an environmental achievement
- Learning the basic tips of optimal management of water saving through the courses prepared by the specialized CBO of the neighborhood.

13 CBOs

CBO-1 Green Management and Planning
CBO-2 Information or public relations
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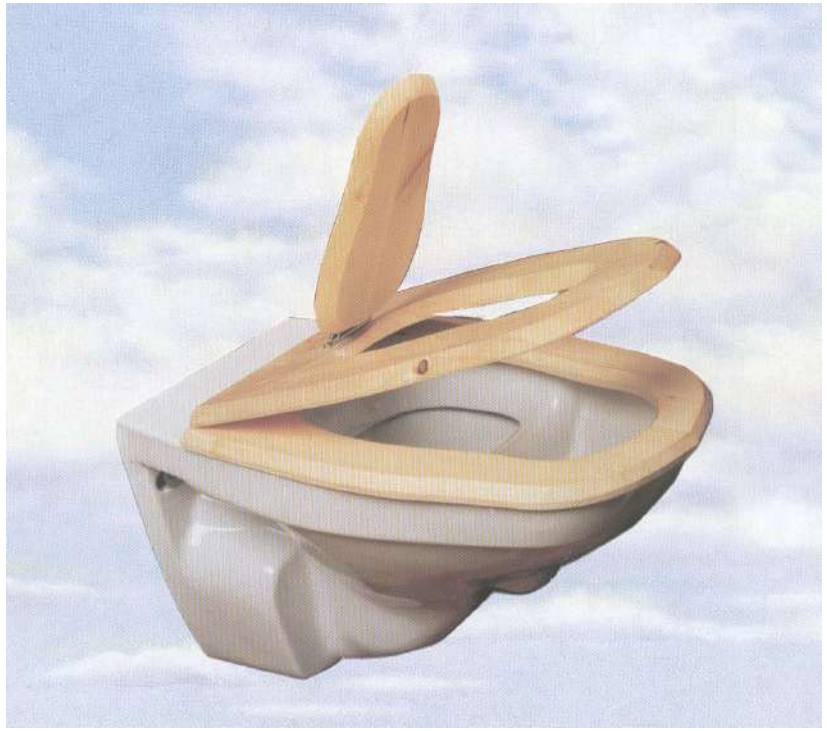
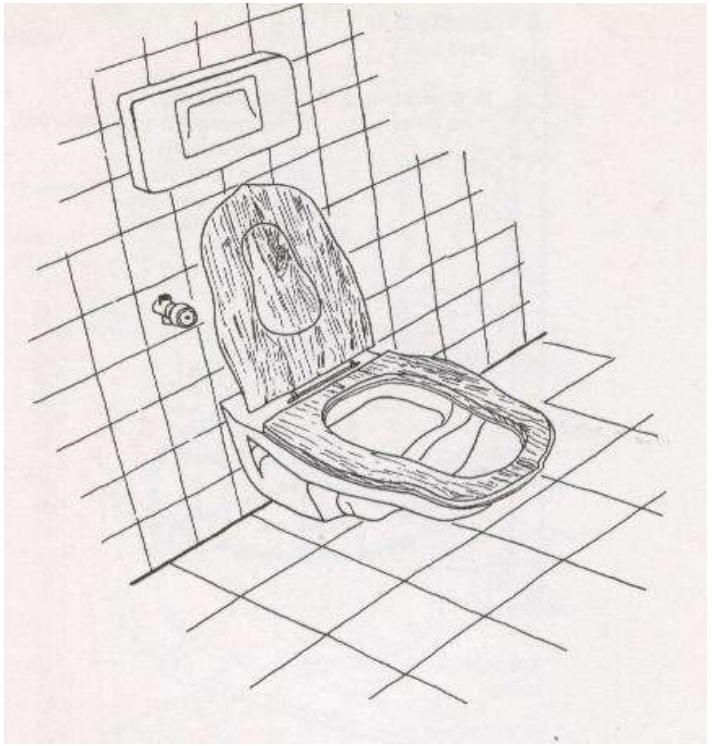
CBO-12 Transportation and Green Traffic
CBO-13 Culture and Health



Green WC
With two Tanks



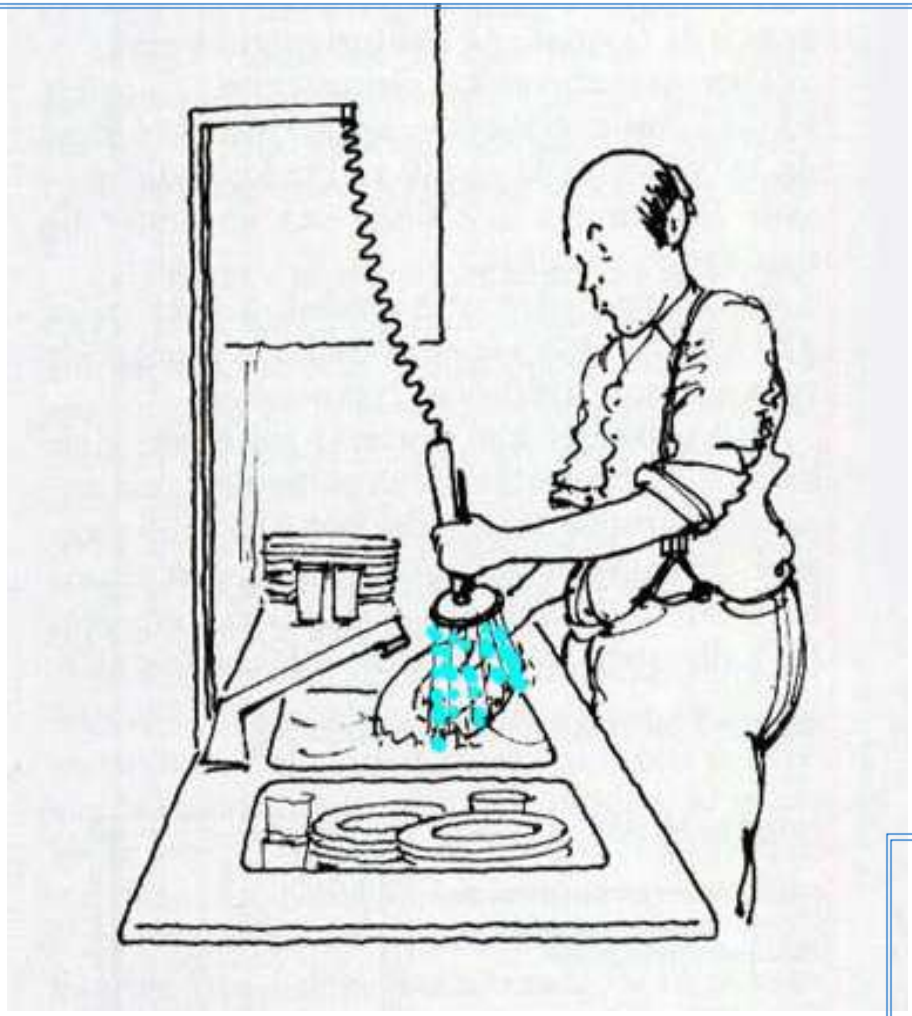
Use of the liquid part of sewage (produced urine) after treatment, for irrigation and producing compost from the solid part of sewage.

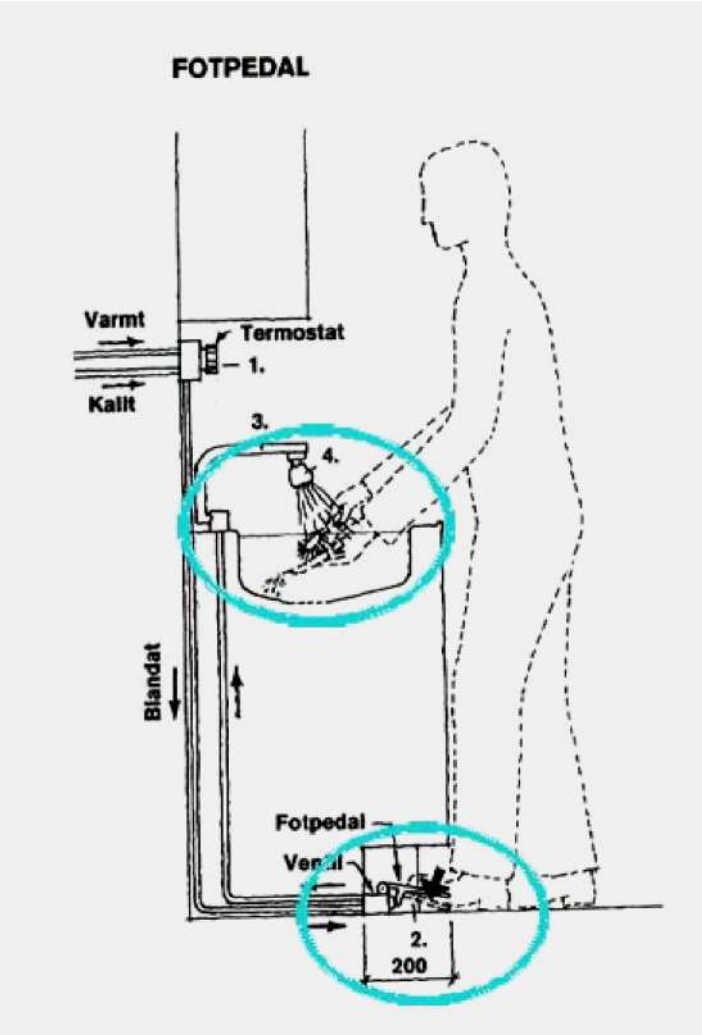
The two-Tanks WC
to separate liquid from solid sewage

Gray Water Recycling

to use directly for WC

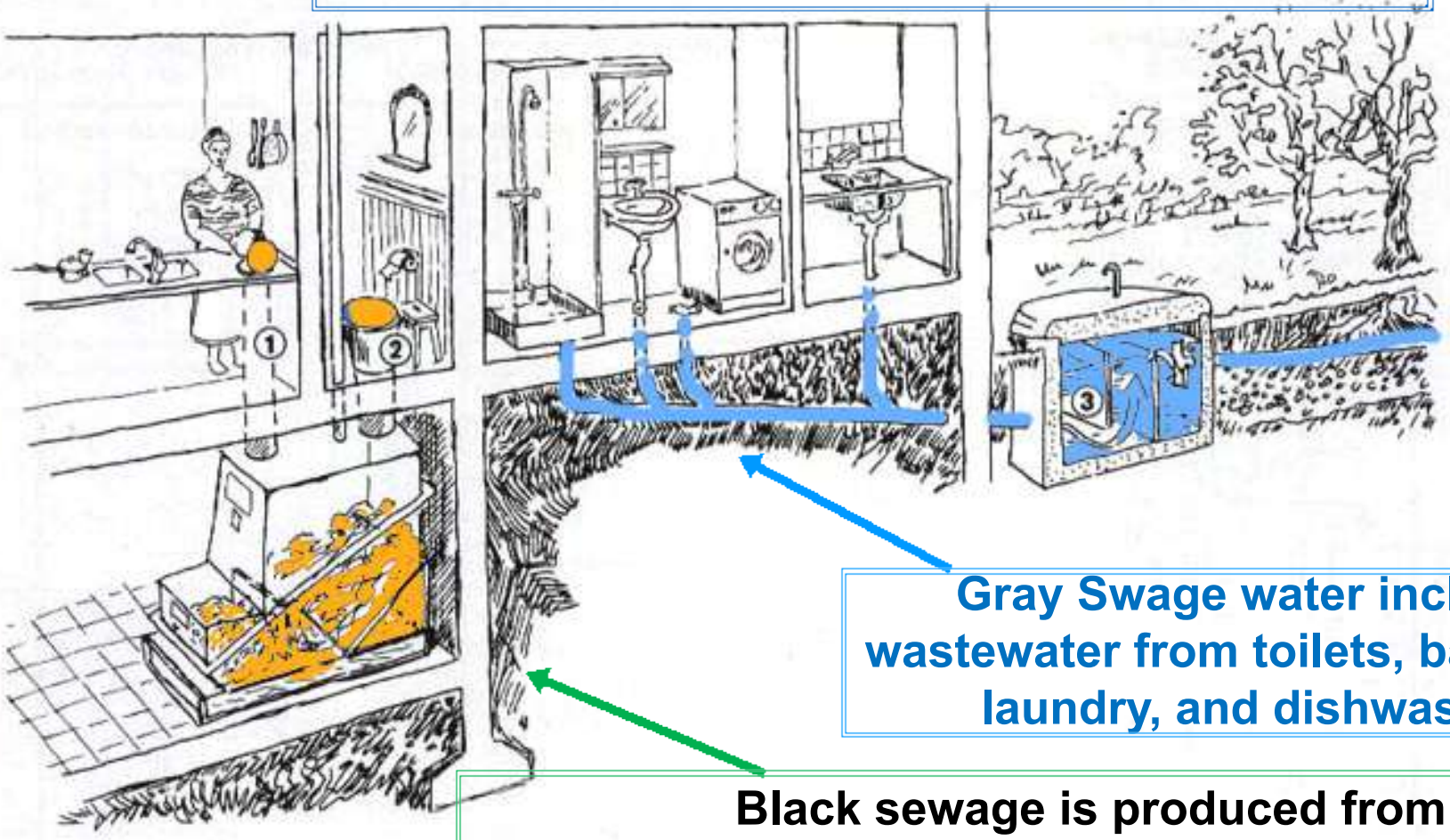
Dishwashing water: has a shower outlet and a pedal to connect and disconnect water.
Output: gray wastewater from dishwasher





Optimum water consumption in the kitchen

Separation of gray sewage and black sewage



Gray Swage water includes:
wastewater from toilets, bathrooms, laundry, and dishwashers

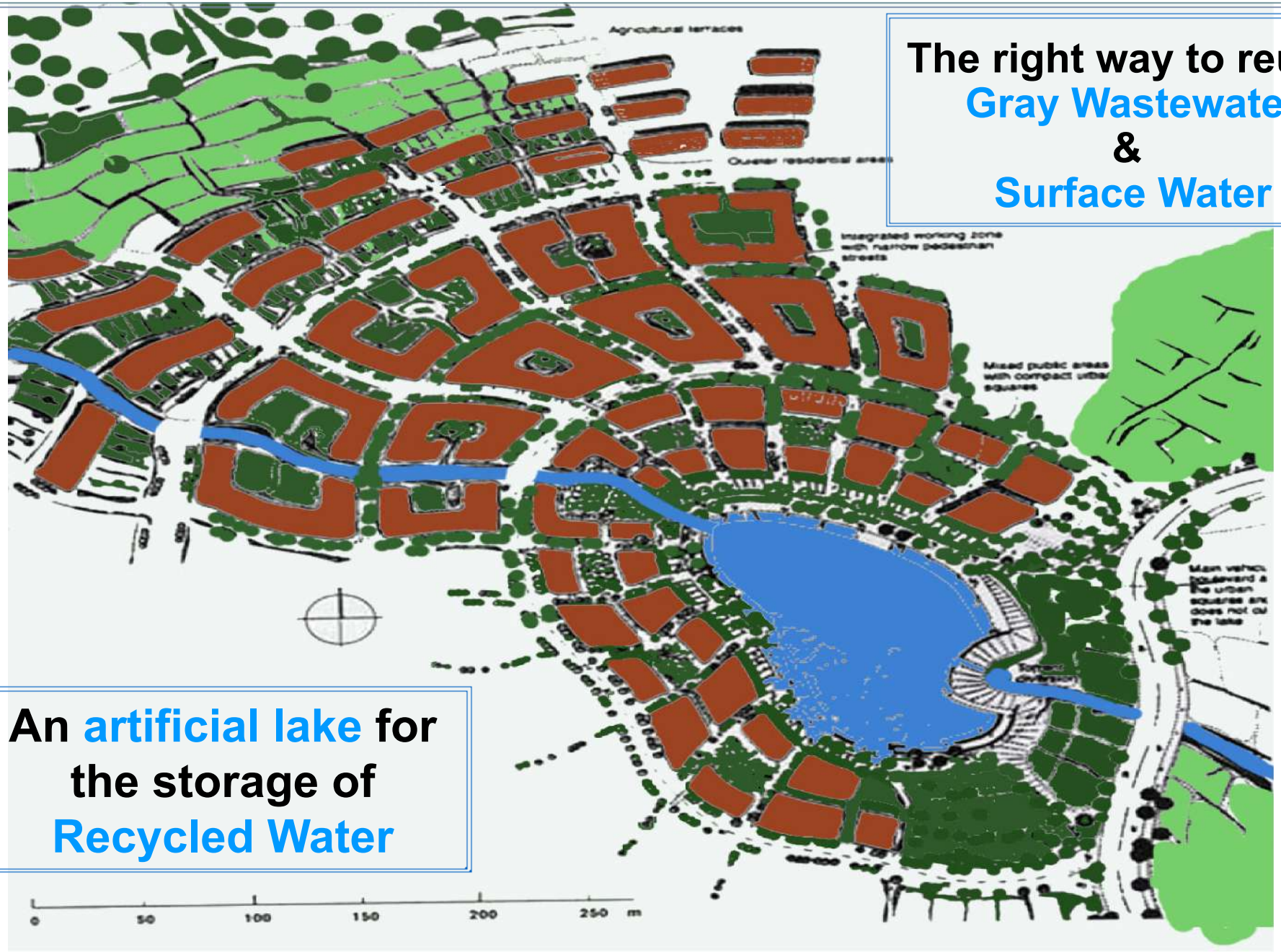
Black sewage is produced from toilets
The solid part of black sewage, in addition to organic materials from kitchen waste, is used for compost production

Water

Rain

Water Recycling

The right way to reuse
Gray Wastewater
&
Surface Water



An artificial lake for
the storage of
Recycled Water

The results of creating Living Roof-Gardens of residential complexes in collaboration with 13 CBOs in each neighborhood

Clean Soil

- Using the highest quality soil, without contamination with chemical fertilizers or dangerous insecticides.
- Sort separation of the origin of kitchen waste to use the "wet part" for compost production
- Learning 16 methods of producing compost through courses organized by expert CBO.
- Learning several methods of planting suitable plants for growing in the greenhouse and Living Garden.
- In addition to planting the plants of interest, participation in the courses of "organic farming methods" organized by the specialized CBO.
- Learning ways of social integration through spending time in the Roof-Garden.
- Changing the land use, so called "Land Recycling" instead of using it for grass to recreational farming.

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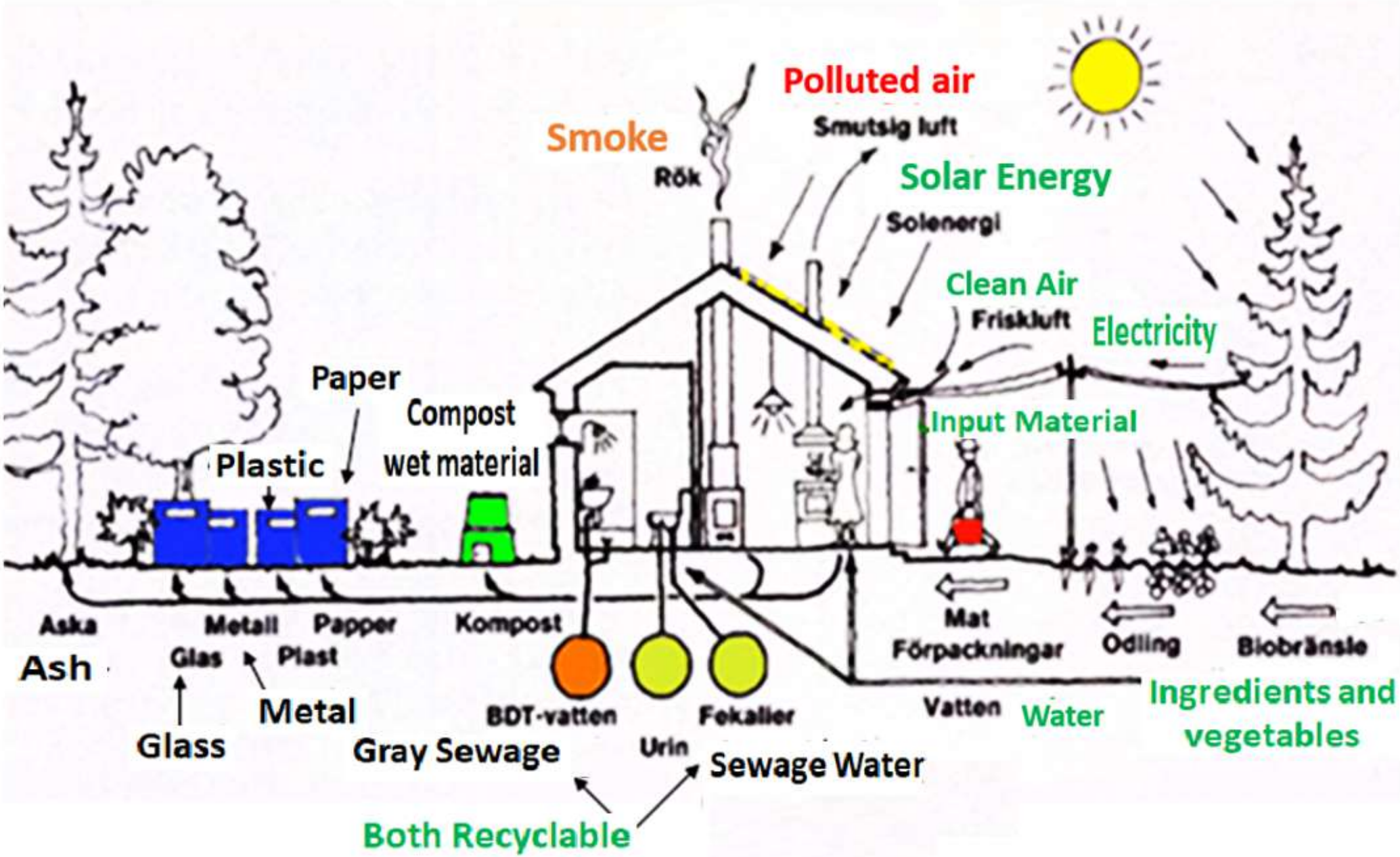
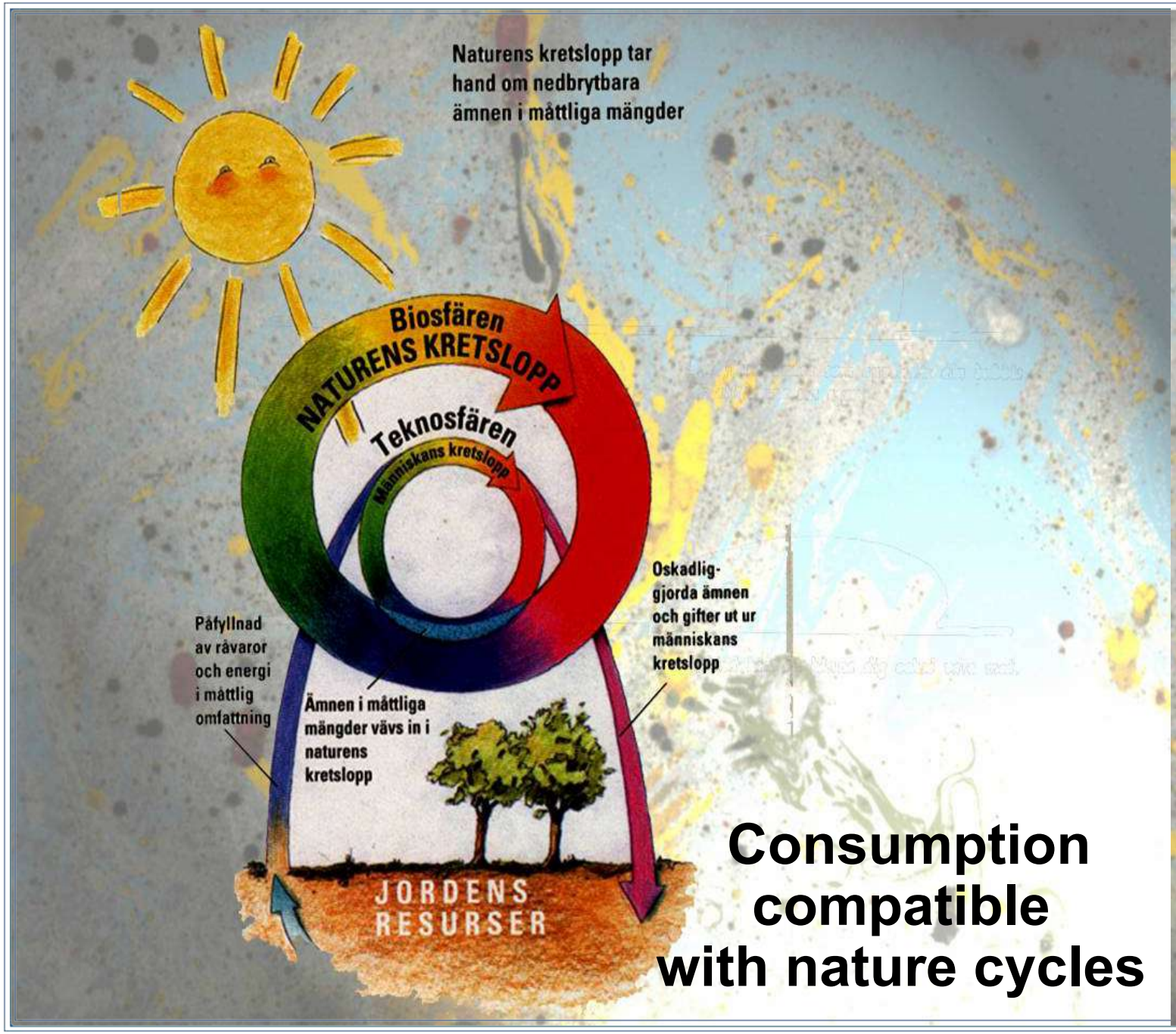
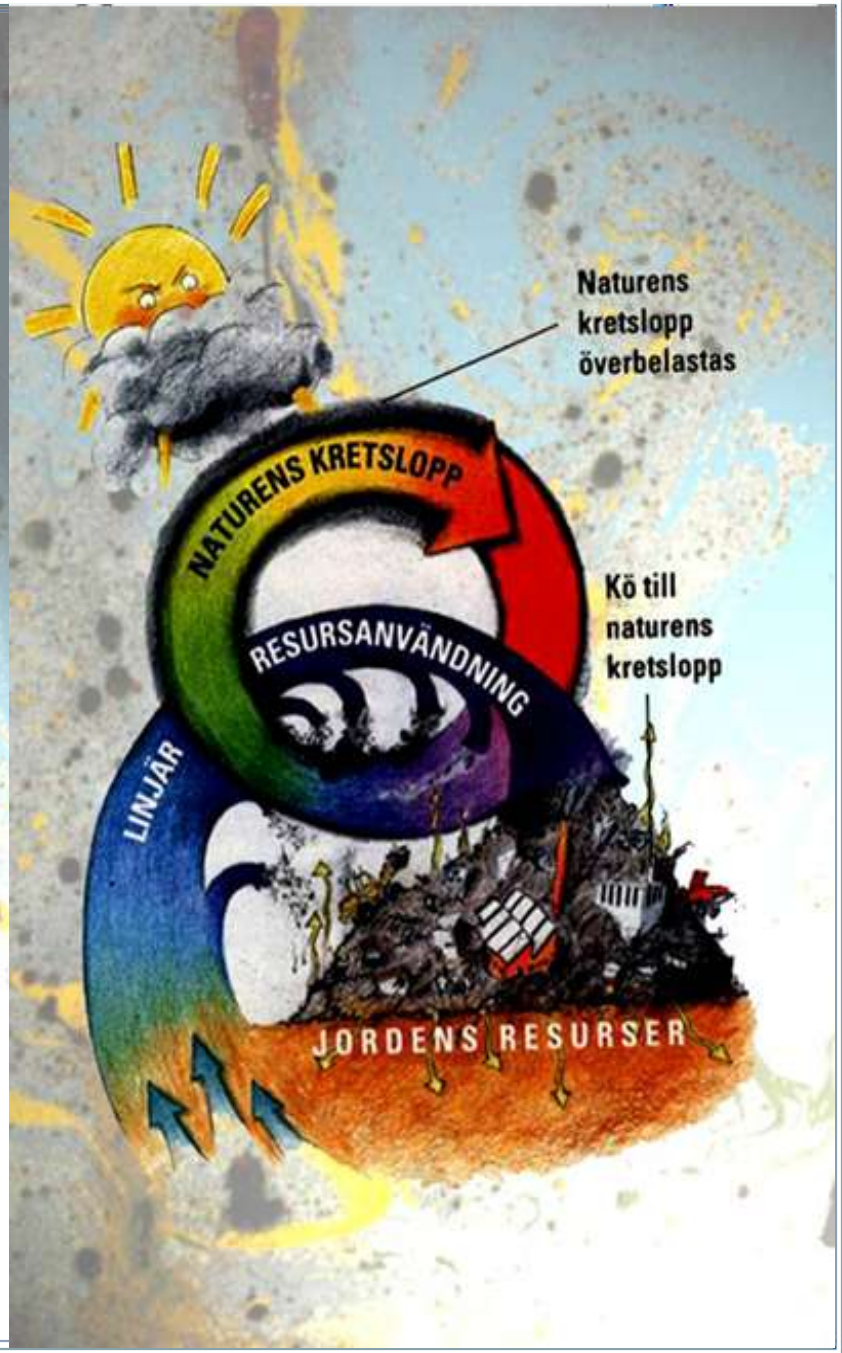
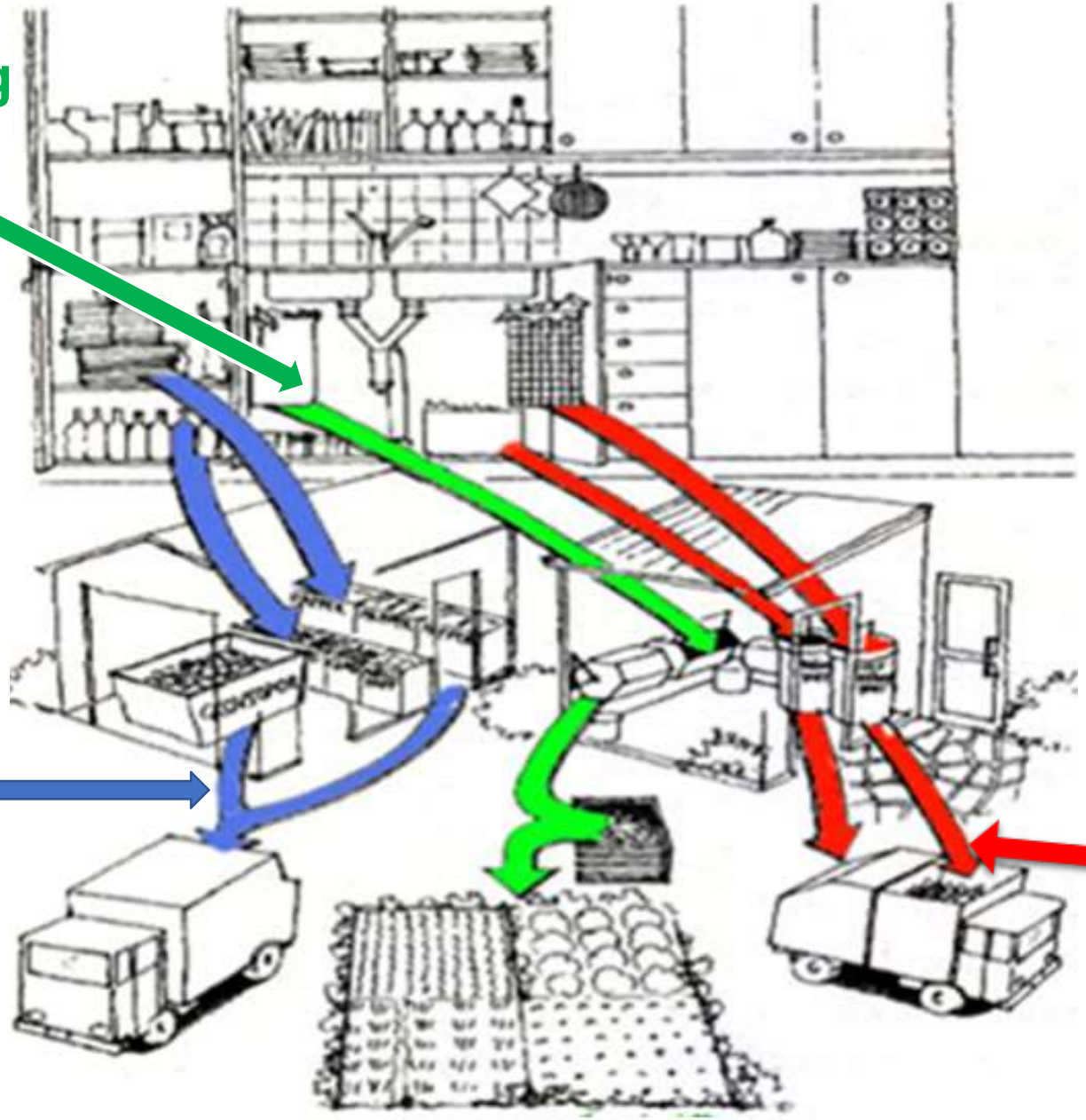

Polluted air
Smutsig luft
Smoke
Rök
Solar Energy
Solenergi
Clean Air
Friskluft
Electricity
Paper
Compost
wet material
Plastic
Input Material
Aska
Ash
Metall
Papper
Kompost
Glas
Plast
Metal
Glass
Mat
Förpackningar
Odling
Biobränsle
Ingredients and
vegetables
BDT-vatten
Fekalier
Vatten
Water
Gray Sewage
Urin
Sewage Water
Both Recyclable





Consumption compatible with nature cycles

Composting
Wet Waste



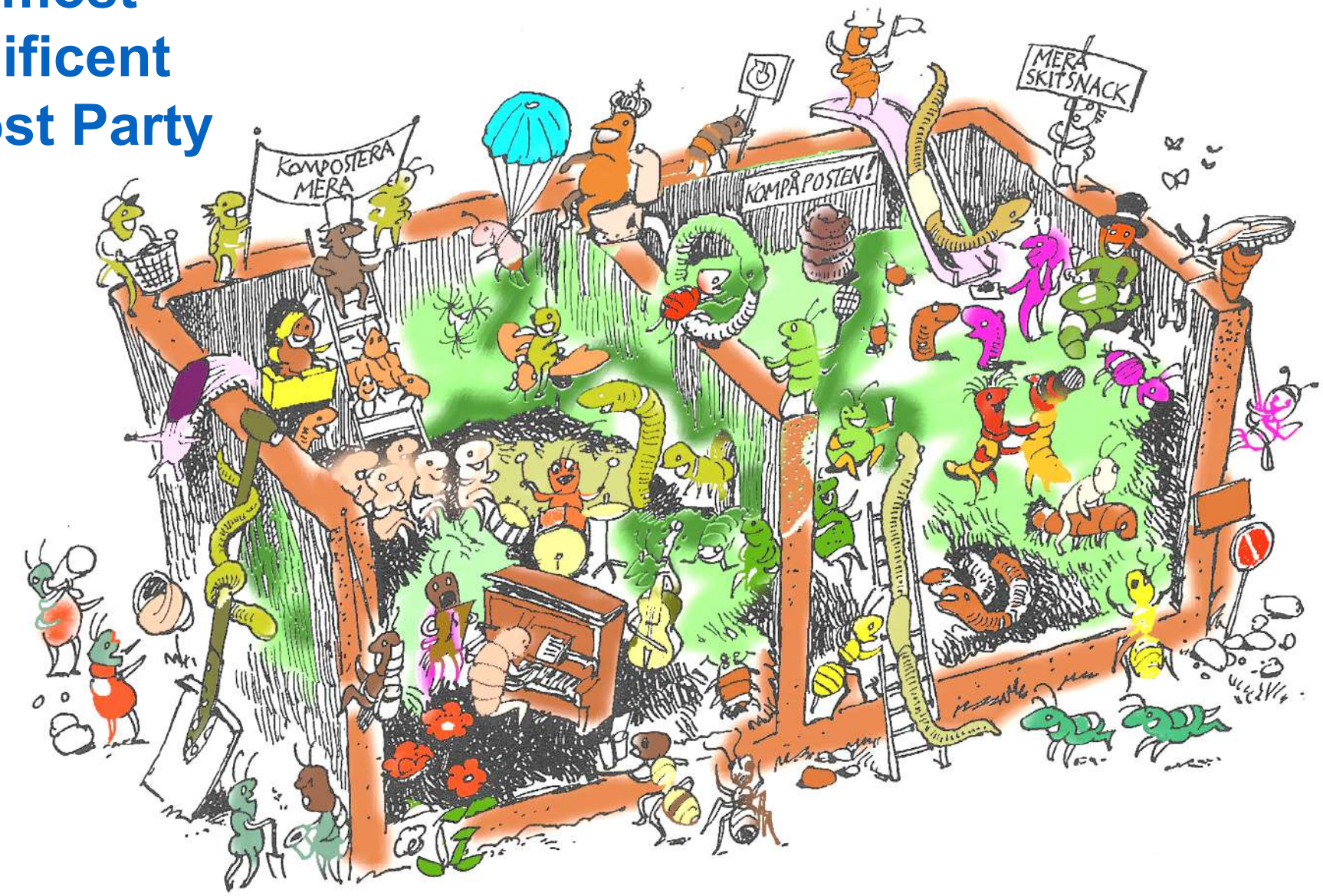
Reuse of
dry waste

First step of Waste Management

Separation from the source of waste generated in homes and activity centers

Incineration and conversion into energy of rejected wastes

The most magnificent Compost Party




Everything
in the world
is 100%
Recyclable

The strangest Green Roof ever

نمونه موردی بام سبز

و

نحوه ی اجرای آن

Green Roof

or

Home Farming

by using

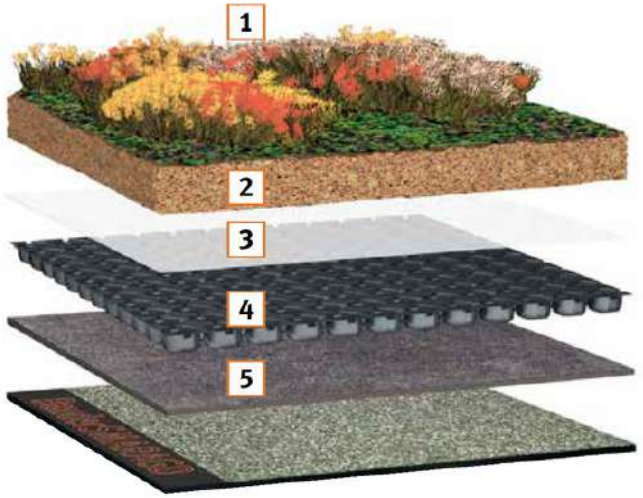
Gray Sewage Production

of each house

and

Compost

produced by each house



Cultivation plots, private greenhouses, or solar panels

Good example done in Sweden 1990 decade

Solar Roof Solution

Greenhouse implementing

Land Recycling by replace grass with favorite vegetables

The results of creating Living Roof-Gardens of residential complexes in collaboration with 13 CBOs in each neighborhood

Clean Air

- Using Solar and Wind energy to provide electricity for lighting Living Roof-Garden and common areas.
- Using Solar Water Heaters to supply hot water to the Greenhouse.
- No need for short Car-Trips from the apartments to the farm for fun in Recreational Farming (instead of that: going from the apartment to the roof will be enough).
- In addition to planting favorite plants, participation in “Keeping the Air Clean” Courses arranged by the specialized CBO.
- Providing Car-Pools by related CBO for .

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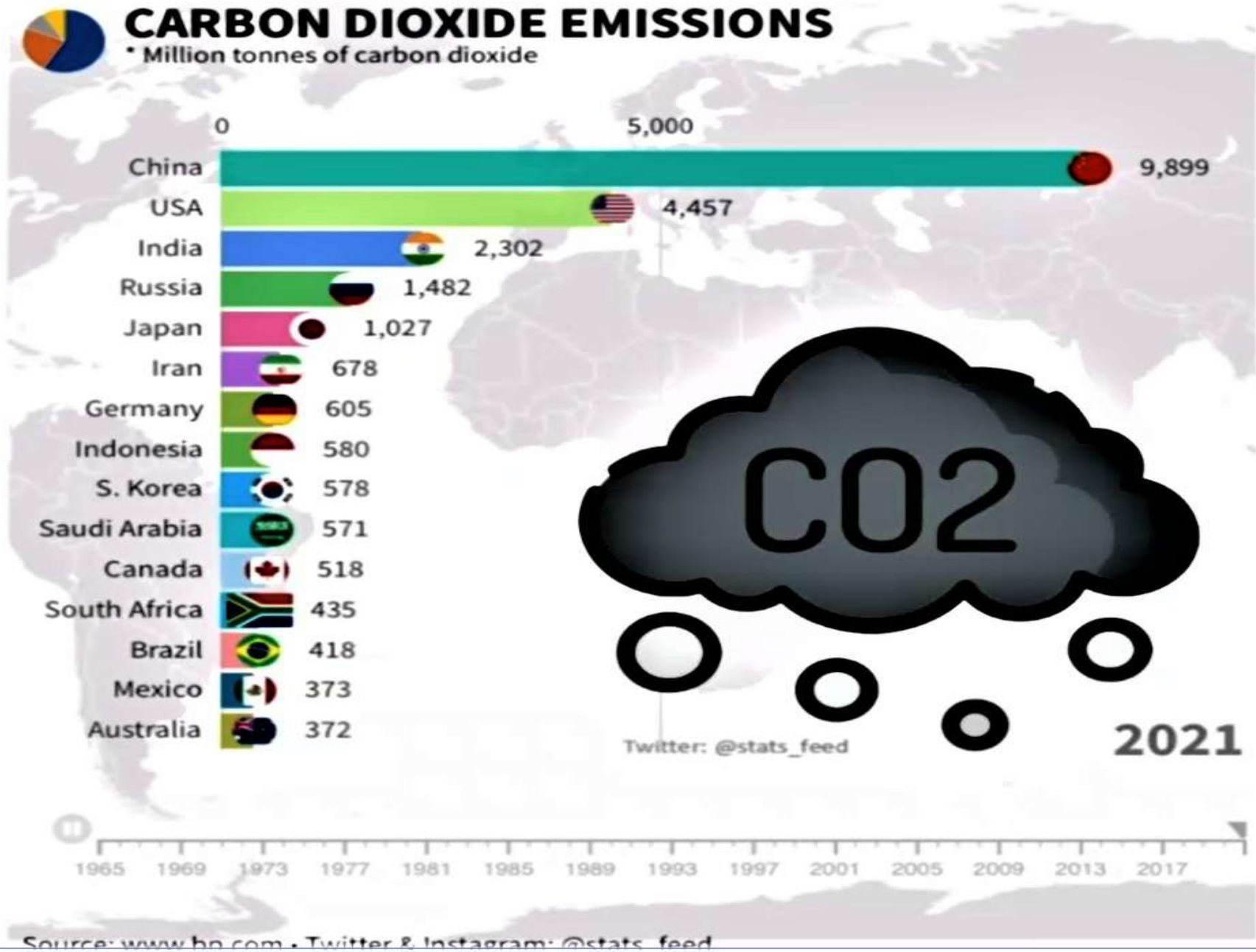
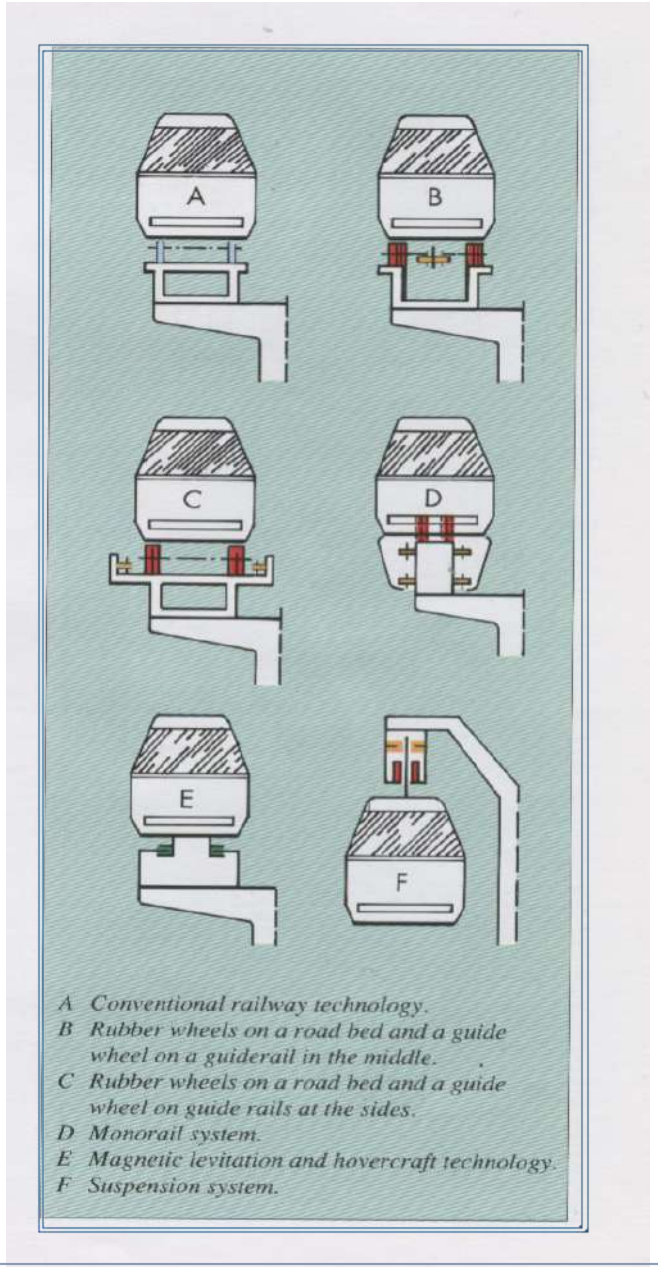

CARBON DIOXIDE EMISSIONS
* Million tonnes of carbon dioxide
0
5,000
China 9,899
USA 4,457
India 2,302
Russia 1,482
Japan 1,027
Iran 678
Germany 605
Indonesia 580
S. Korea 578
Saudi Arabia 571
Canada 518
South Africa 435
Brazil 418
Mexico 373
Australia 372
CO2
Twitter: @stats_feed
2021
1965 1969 1973 1977 1981 1985 1989 1993 1997 2001 2005 2009 2013 2017
Source: www.bp.com • Twitter & Instagram: @stats_feed

Electric vehicles

Gothenburg's Two-wheels Vehicles Chaos 2021

Urban Tram and Monorails (Light Rail) or Train



A Conventional railway technology.
B Rubber wheels on a road bed and a guide wheel on a guiderail in the middle.
C Rubber wheels on a road bed and a guide wheel on guide rails at the sides.
D Monorail system.
E Magnetic levitation and hovercraft technology.
F Suspension system.

The next item

and principal factor is providing

Clean Energy

Supplying the electricity needed for lighting and heating

Roof-Garden and Greenhouse

instead of using the municipal power grid

by related CBO, in collaboration with 13 CBOs

The results of creating Living Roof-Gardens of residential complexes in collaboration with 13 CBOs in each neighborhood

Clean Energy

- Less energy consumption by eliminating the commuting of residents from home to the farm by vehicle.
- Production of electricity from Solar and Wind energy located on the roof of greenhouses.
- Production of hot water required by the greenhouse through solar water heater.
- Production of Wind Energy by propellers on the roof of the Greenhouse by specialized CBO.
- Use of electricity generated by solar and wind energy systems in the common spaces of the residential complex.

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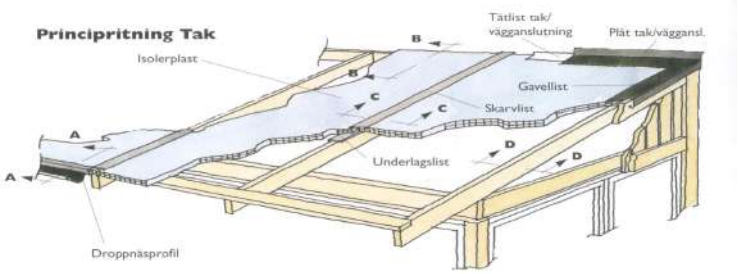
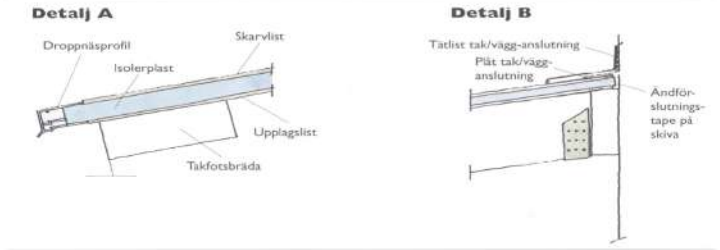
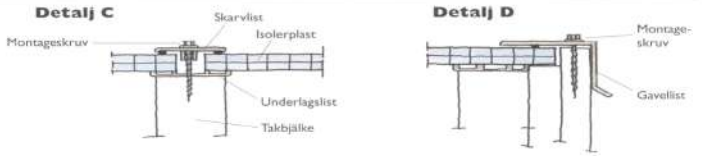
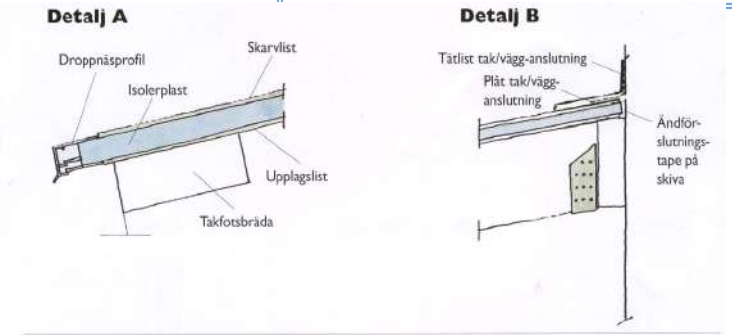




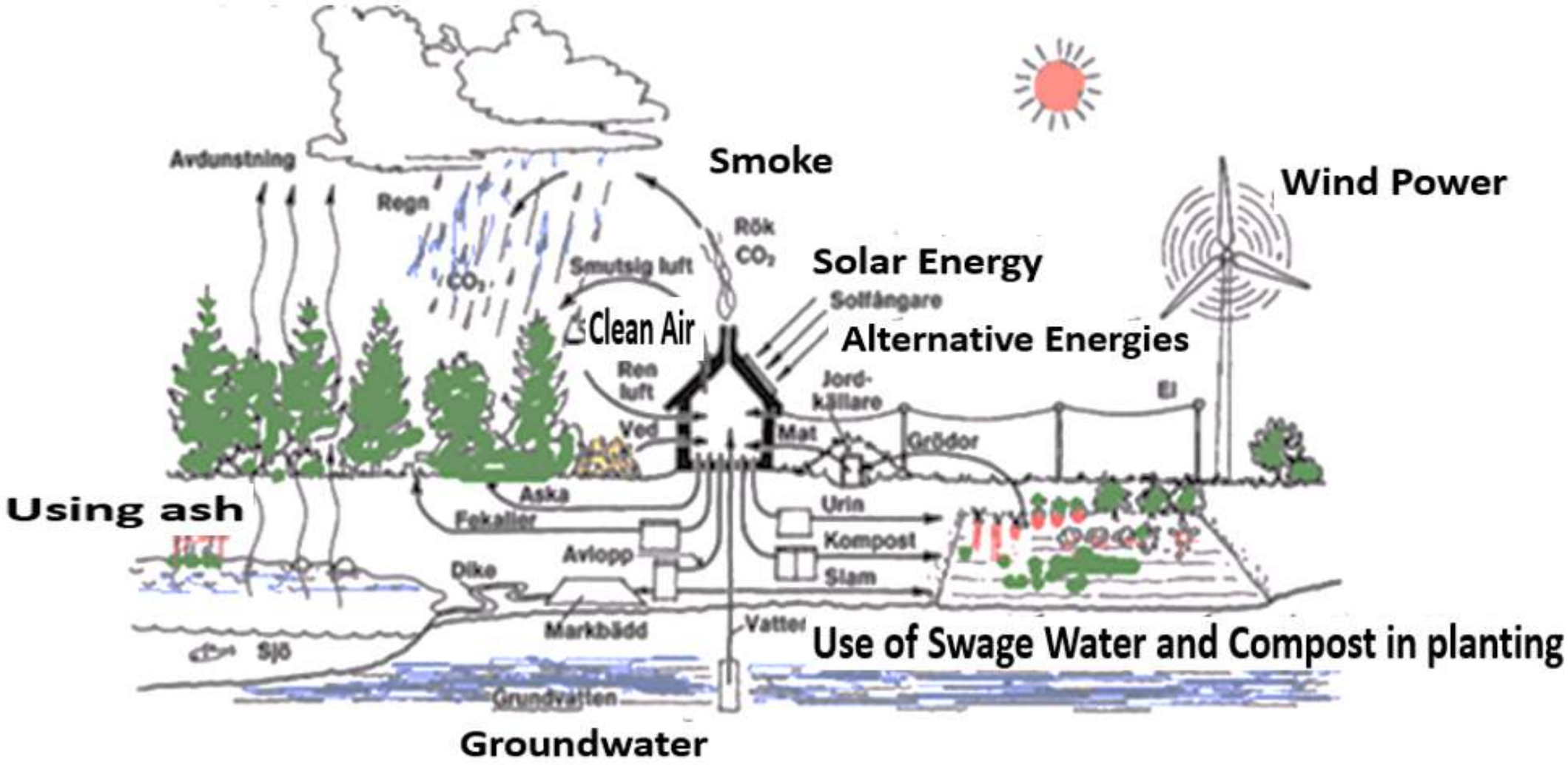


Technical details of the roof covering and panel connections

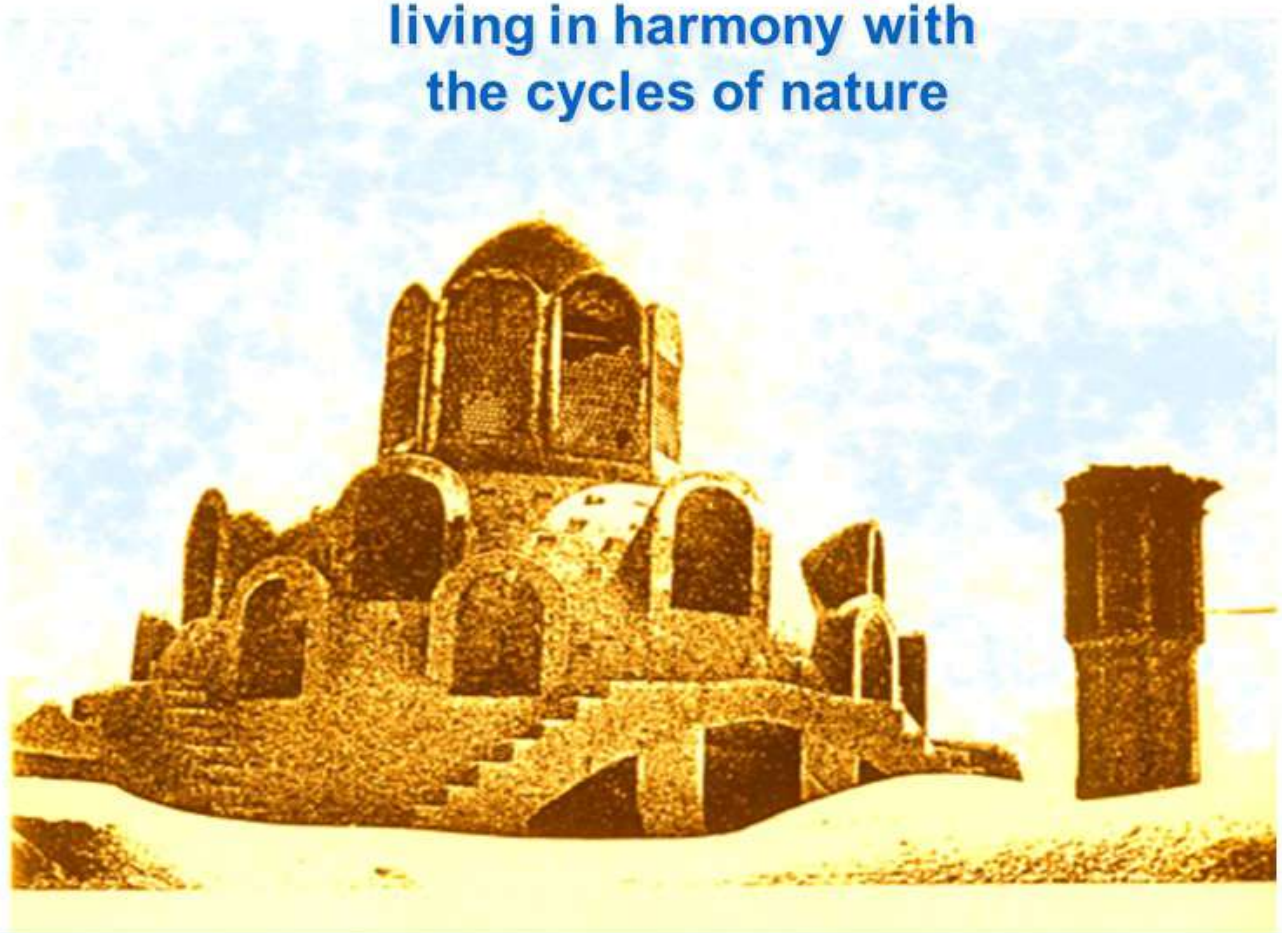


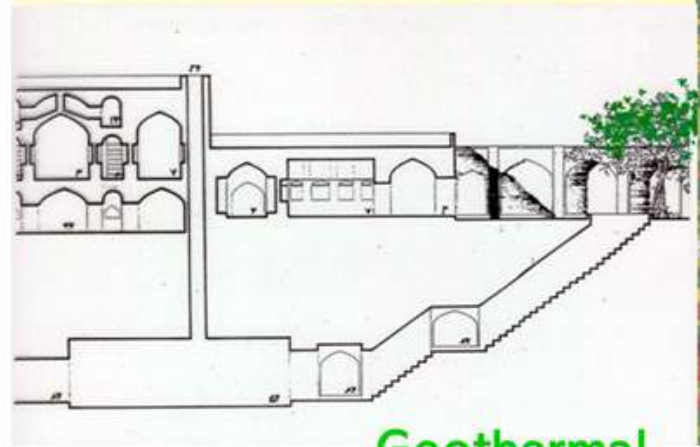
Implementation details of roof covering by using various types of moisture and thermal insulation

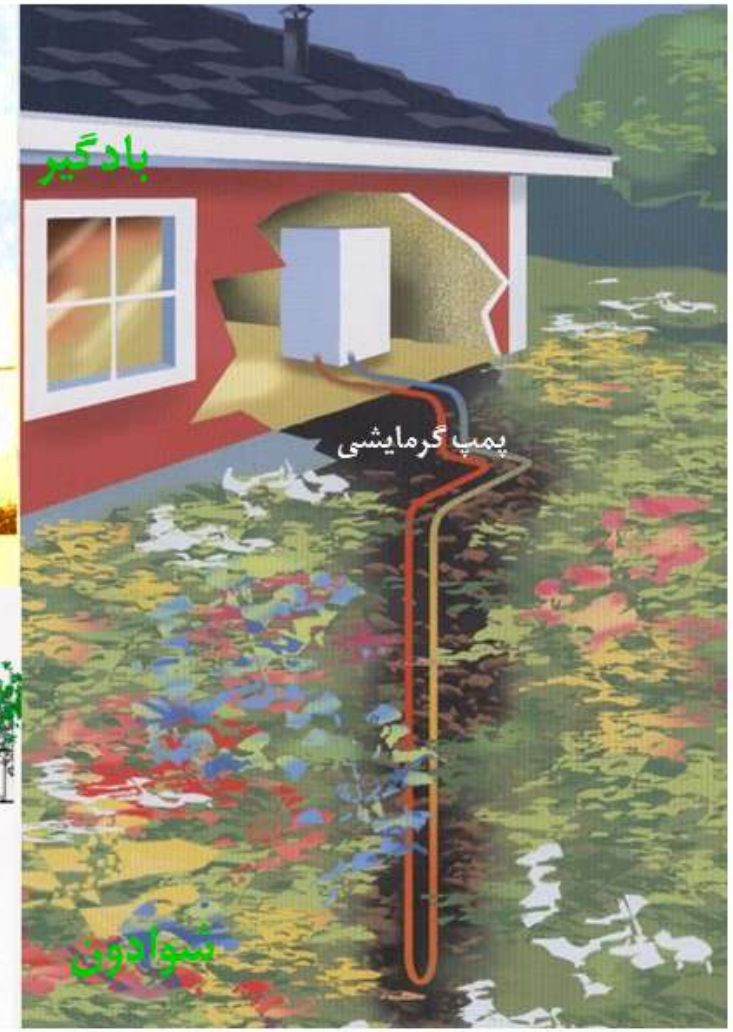
The cycle of Smoke from burning wood



Indigenous cultural, architectural, urban and social heritage of Iran in living in harmony with the cycles of nature

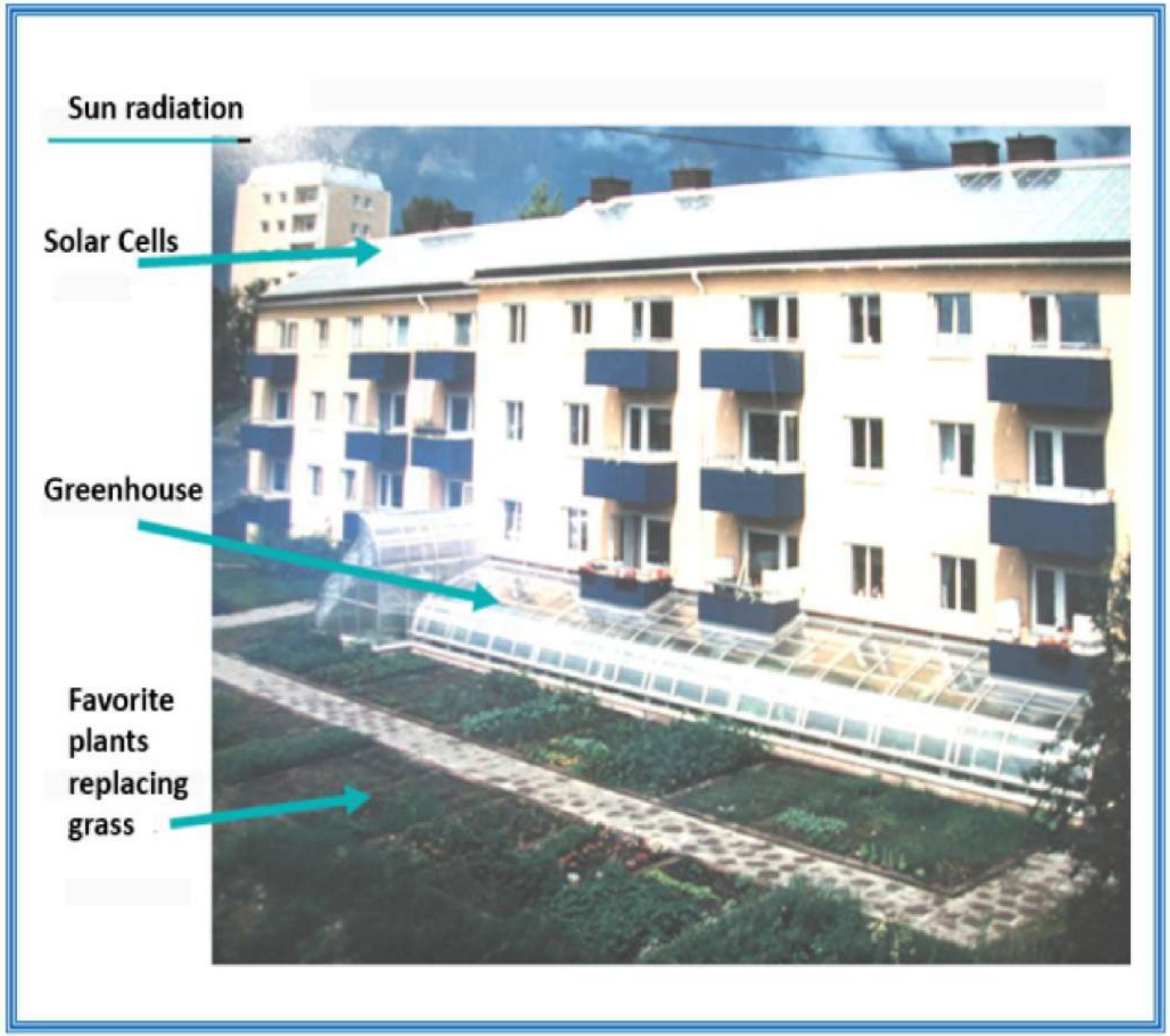






Geothermal

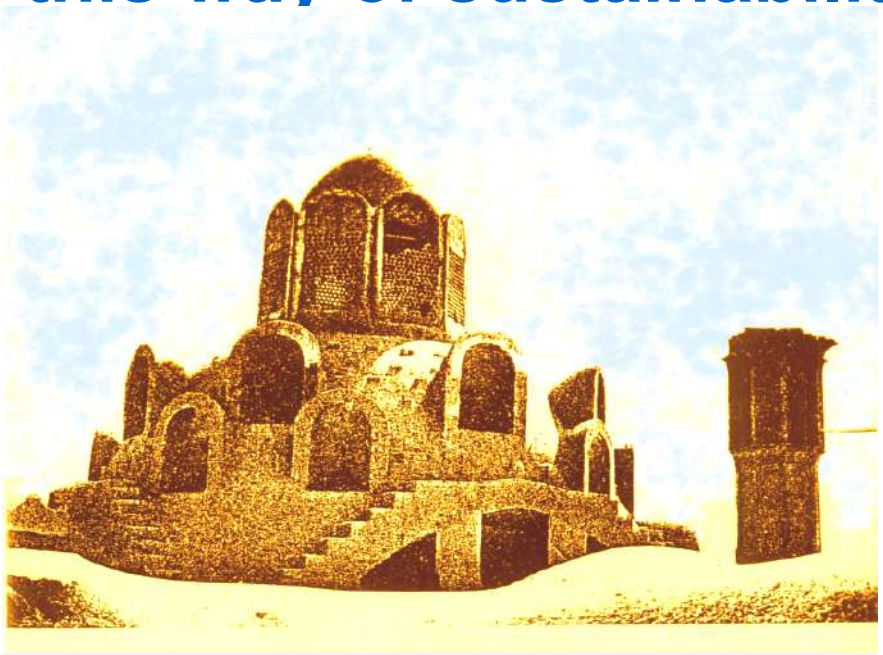
Usable wind energy in a residential unit up to a neighborhood or village

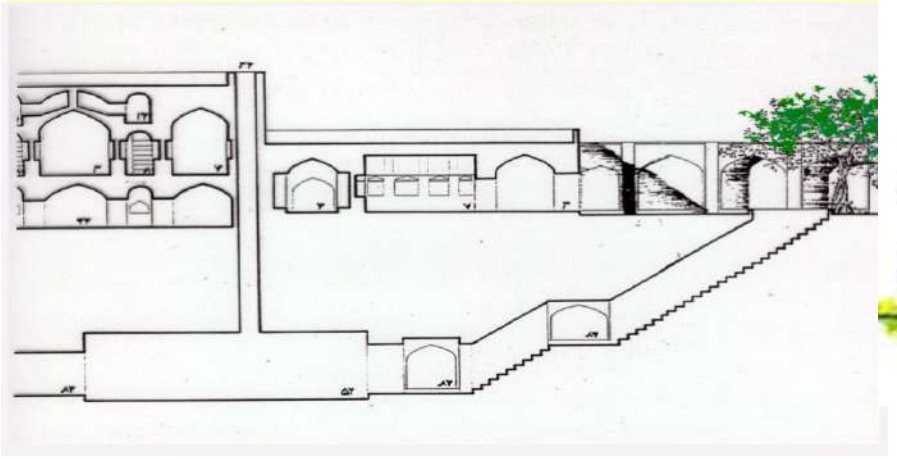


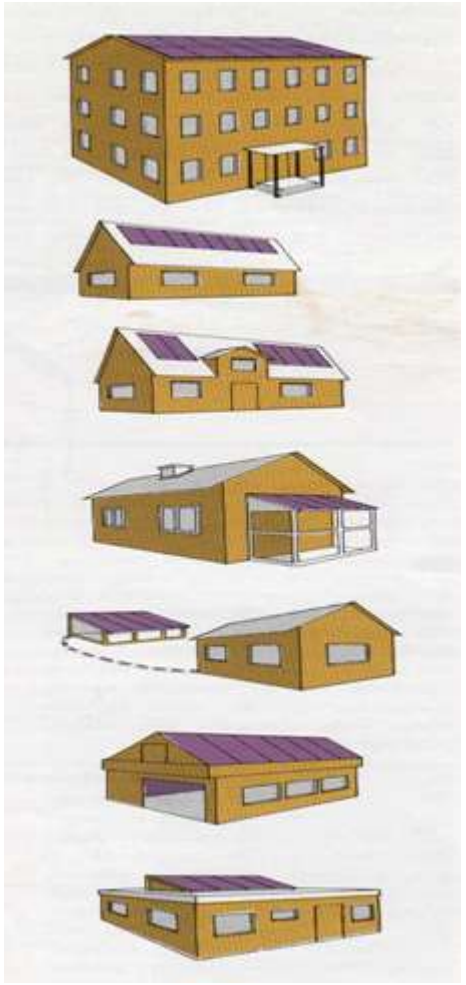
Use of unused land and Spaces

Renewable Energy

Searching local cultures on alternative energies to expand this way of sustainability on a worldwide scale







Modification of Unused Sloping Roofs to Useful Spaces in Architecture

Such as Living Roof-Gardens

The desired expecting of creating
Living Roof-Gardens
on the all roofs of residential complexes
in collaboration with 13 CBOs in each neighborhood

The desired expecting of creating
Living Roof-Gardens
on the all the roofs of residential complexes
in collaboration with 13 CBOs in each neighborhood

The Proposal, as an innovation, will follow
the targets and goals expected by
“Earth Summits”
“Stockholm” 1972, “Rio De Janeiro” 1992, “Johannesburg” 2002,
“Rio+20” 2012, “Stockholm+50” 2022,

Most of the decision-makers and urban planners are either unaware of it, or if they accepted the approvals of the Earth Summits, today they have forgotten those approvals regarding the planning and decisions of urban and social development. It's a pity that the positive results of such approvals that have been successful in many regions of the world are so easily going to be forgotten.

The desired expecting of creating
Living Roof-Gardens as the result of Arch-Innovation
on the all roofs of Residential Complexes

Through Arch-Innovation, many Global Desired Goals will be Achieved, such as:

- **Scandinavian Architecture,** instead of being affected by **Climate Change**, will develop and upgrade from this issue, using its benefits instead of disasters,
- The **Construction Industry** will be developed and with the production of innovative Prefab Puzzle Pieces, as a new incredible product, by producing a kind of mixture of building materials and **Solar Cells**, for **Living Roof-Gardens**.
- Unused Roofs of Residential Complexes, Schools, Businesses and other voluntary buildings will be provided by **Living Roof-Gardens** to create a gathering place for the residents while meeting **Nature**, not far from their home.
- **Apartment dwellers** will be able to establish the needed **CBOs** to provide such a result and have daily contact with their beloved **Farm Plot** and will not have to travel away from home to get their leisure agricultural plots.

Living in the heart of nature