



WATER

Current water supplies are highly energy dependent - so any energy shortages will affect water supply. Our water reserves are almost 90% depleted (and/or polluted), so for such an essential service such as water - it is critical for households, Schools and businesses to supplement water supplies through rain water harvesting and grey water capture.

ISS provides integrated solutions using a variety of purifying and storage technologies. From low-flow faucets, to tanks, to constructed wetlands, we have all the solutions to help you save water while giving you water independence from utility supply.



FOOD

Current food supplies are 100% linked to fossil fuels, energy and water supplies. In agriculture fuel is needed for ploughing, spraying & harvest, while in distribution energy & fuel are needed for refrigeration and transport. In fact the food industry itself has a higher carbon footprint than almost all other industries combined. This is partly because food is a huge consumable item and partly because of the out-dated/unsustainable mechanisms that drive the industry.

Eg. It takes up to 300 (or more) calories of energy to get 1 calorie to your plate.

ISS consultants will help your school develop a sustainable food garden. From sustainable soil practices to water saving interventions - we can assist you in creating the food garden you want.

In short. . .

It is important for our society to consider implications of our energy, water and food supplies beyond solely the cost saving factor. Gaining independence in these 3 areas goes beyond Rand savings, but it is also about our future as a species on this ravaged planet.



ENERGY

The combined energy consumption of only about 30% of the S.A. population is already creating stresses on supply and contributes to a much higher percentage of carbon emissions.

Finding ways to SAVE energy is by far the best way to make an impact. And water heating is one of our biggest household energy consumers - this is considered in the sustainability world as "low-hanging fruit". ie. highest impact with the least cost.

Once maximum SAVING has been achieved from water heating through solar/heat pump(or both) - then one can look at PRODUCING power through photovoltaic solar generation and other renewable means.

ISS will look at your long term energy plan and advise on the RIGHT system for your circumstance. "Off the shelf" or standard solar water heaters are sometimes not the most efficient. ISS will integrate solar water heating with EXISTING infrastructure or combine technologies to provide the best solution for maximising savings at the best price.

SOLAR WATER HEATING

ISS offers integrated, intelligent & appropriate solar water heating solutions to increase savings. We can use your existing geyser by replacing the 4kW element with a 2kW element and install a digital controller that allows you to control temperature and time of cycles according to your family's schedule. Experience has shown that intelligent systems have the highest capacity for savings.

HEAT PUMPS

Heat pumps achieve at least 80% of the savings possible with a comparable solar water heating system, but at a lower installation cost.

Integrating a small heat pump with solar panels create the largest savings - the 2kW electric element used for topping up heat - is replaced by 1kW heat pump to generate the same heat.

Heat pumps are the most cost effective technology for heating water in commercial applications.

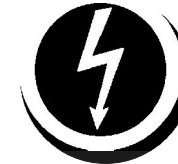
SOLAR PV

Solar PV enables you to produce your own power AND provides back-up during power outages. ISS grid tie solutions also reduce the need for large battery banks for storage while protecting all electronic appliances from unstable grid supply.

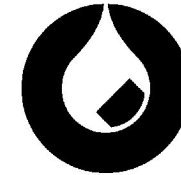


INTEGRATED
SUSTAINABLE
SYSTEMS

WHAT WE DO



ENERGY



WATER



FOOD

ISS assists household & commercial consumers to make the transition from high dependence on polluting and unsustainable utility supplies to more independent and sustainable sources - through a range of renewable and integrated systems

HOW AND WHY WE DO IT



environment



R/savings



sharing

Our current access to energy, water and food are the highest contributors to carbon emissions, waste, chemical pollution and resource depletion. The current ways we attain our critical utilities makes it impossible to meet demand in the long term.

Solutions only in lie reducing that dependence - because as demands for these services increase, continued, affordable and reliable supplies will be affected, while contributing even further to environmental impacts.

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environmental

It is imperative to look at renewable solutions to reduce our collective demand on our resources in general, but on our energy and water resources in particular.

While the primary objective of energy and water saving is to reduce ENVIRONMENTAL impacts, true sustainability can only be achieved when other secondary objectives are included in the equation - so environmental solutions need to be financially viable and ALSO have a greater value to society in terms of the WAY "Green" products are produced & marketed.

While there are many solutions - the example below demonstrates 3 dimensional benefits of solar water heating at a domestic level, and heat pumps at a commercial level.

ENVIRONMENTAL IMPLICATIONS OF WATER HEATING INTERVENTIONS

SOLAR WATER HEATING - DOMESTIC ONLY

25% saving is possible on intelligent system on specific timer/cycle setting

As consumption increases - the savings decline because it is assumed that a lower portion of that consumption is derived from water heating.

CURRENT kWh	*15-25% SAVING/m	*15-25% SAVING/a	9 years kWh SAVINGS	9 years CARBON SAVINGS
4 000	750kW	9 000kW	80 000kW	48 600 Tco2
3 000	600kW	7 200kW	65 000kW	38 800 Tco2
2 000	400kW	4 800kW	43 000kW	25 300 Tco2
1 000	250kW	3 000kW	27 000kW	10 800 Tco2

These are the levels of carbon savings solar water heating alone offers . . . there are many ways to reduce electricity consumption.

WATER HEATING - COMMERCIAL

Depending on the type of operations, Industrial scale water heating usually represents a lower proportion of overall energy consumption than in a domestic setting, but the numbers are still significant in Rand terms.

CURRENT W/h kWh	*50% SAVING/m	*50% SAVING/a	5 years kWh SAVINGS	5 year CARBON SAVINGS
8 000	4000kW	48 000kW	240 000kW	22 500 TCo2
4 000	2000kW	24 000kW	120 000kW	11 250 Tco2
2 000	1000kW	12 000kW	60 000kW	5 600 Tco2
1 000	500kW	6 000kW	30 000kW	2 800 Tco2



R/savings

While these interventions are not purely about economics, factors such as reducing load on an already over-extended grid supply, and gaining some independence from the grid itself - there must be a level of economic viability in renewable energy or else it cannot be considered sustainable.

Solar water heating (even without the rebates that only succeeded in driving up the price of the systems anyway) is considered a financially viable investment.

After a payback period of 4 years - at escalating cost factored in - the investment return is around 12% p/a. This is more than investing right now in any interest bearing account.

FINANCIAL IMPLICATIONS OF WATER HEATING INTERVENTIONS

The Table below indicates the average savings to be expected from Solar Water Heating

CURRENT kWh	*15-25% SAVING/m	*15-25% R SAVING/m	9 years kWh SAVINGS	9 years R SAVINGS
4 000	750kW	R650	80 000kW	R160 000
3 000	600kW	R550	65 000kW	R130 000
2 000	400kW	R350	43 000kW	R 90 000
1 000	250kW	R250	27 000kW	R 55 000

These are the levels Rand savings efficient water heating alone offers . . . there are many ways to increase savings.

WATER HEATING - COMMERCIAL

Whatever the type of industry, renewable (Solar) or efficient (Heat Pump) water heating can more than halve the current cost of water heating (this will be a variable percentage of overall consumption, depending on the water heating requirements of the company).

CURRENT W/h kWh	*50% SAVING/m	*50% SAVING/a	5 years kWh SAVINGS	5 year R/SAVINGS
8 000	4000kW	R32 400	240 000kW	R264 000
4 000	2000kW	R16 200	120 000kW	R132 000
2 000	1000kW	R8 100	60 000kW	R 66 000
1 000	500kW	R4 050	30 000kW	R 33 000



sharing

ISS veivs the emerging green sector as a huge opportunity for the development of "green jobs" and skills development in South Africa.

If "green" products are produced, marketed and distributed using mainstream business mechanisms (as is currently the case) - the resulting products end up a very dirty shade of green because the supply mechanisms have a high carbon footprint, yet the opportunity to bring true sustainability into being will be lost forever...

The world's current / accepted business model is 95% economic growth based, and environmental and social issues are usually token measures. In a truly sustainable economic model - a well balanced focus across economic, environmental and social aspects is absolutely essential.

Skills & Capacity Development

ISS's holding company - Inkanyiso Consulting has dedicated years to skills development to emerging contractors in the building sector. Over the past 20 years, we have trained, mentored and developed over 1000 successful contractors.

ISS objective is to assist directly in developing capacity in the emerging green sector in order to achieve a social imperative alongside the economic and environmental interventions

School based incentive Program

ISS is willing to work with schools to help them achieve their environmental, social and economic objectives.

We have introduced an incentive program for schools to raise money towards their commercial scale sustainable components in energy, water or food - by offering a commission to the school for every lead for domestic installations derived from pupils driving the initiative.