



Sunday a



Sundaya

S4

Maintenance free 12VDC electricity storage system
 LCD display with clear 'State of System' indicators
 Available in 480 and 600 Watt-hours Capacity
 Plug & Play installation

Function / Features

Maintenance free 12VDC electricity storage system
 LCD display with clear 'State of System' indicators
 Available in 480 and 600 Watt-hours Capacity
 Plug & Play installation

Product description

The S4 (Sundaya Smart Storage System) is a completely sealed and maintenance free 12VDC electricity storage system that can be charged directly from any size solar panel ranging from 10 up to 120Wp or from other power source like Sundaya's DC10.

The unit is equipped with a unique electronic battery management system with a clear battery state of charge display (LCD) and buzzer to warn user when battery is running low.

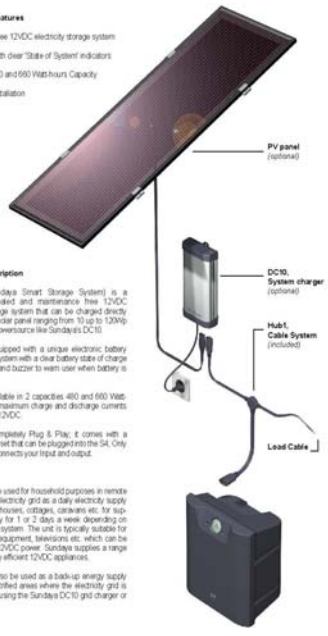
The S4 is available in 2 capacities 480 and 600 Watt-hours and the maximum charge and discharge currents are 10Amp @ 12VDC.

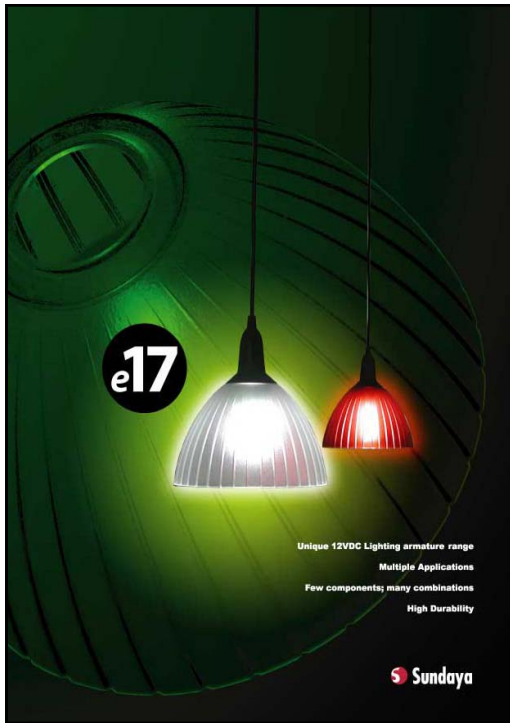
The unit is completely Plug & Play; it comes with a standard cable set that can be plugged into the S4. Only one plug that connects your input and output.

Applications

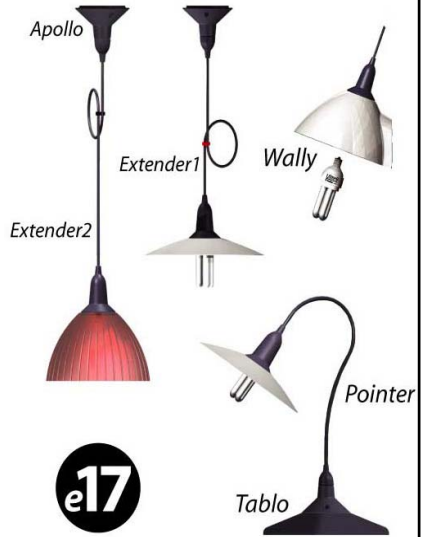
The unit can be used for household purposes in remote areas without electricity grid or in daily electricity supply or in weekend houses, cottages, caravans etc. for supplying electricity for 1 or 2 days a week depending on the size of the system. The unit is typically suitable for lighting, audio equipment, televisions etc. which can be powered with 12VDC power. Sundaya supplies a range of highly energy efficient 12VDC appliances.

The unit can also be used as a back-up energy supply in already electrified areas where the electricity grid is not reliable by using the Sundaya DC10 grid charger or a PV panel.





The **Sundaya E17** range provides a unique variety of 12VDC lighting armatures for all applications you need in and around your home, office or shop.
With only a few components you can build any lamp for any purpose that you require.
The various shades can be interchanged within a minute without the need of tools. The products are nicely packed in display boxes to be presented to customers in your retail shops.
Posters of all its applications are available on request.



Solar Rural Electrification

Experiences and Advises....

#

Solar Rural Electrification:

- **Many Governments/ NGO's/NPO's around the world have high attention for rural electrification.**
- **Multimillions of dollars are spend on Solar Rural Electrification Projects each year.**
- **The results of those projects are very disappointing !!!**

Why?

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Key problems are:

1. **Too heavy involvement / regulation by donors and governments in projects.**
2. **Combined with very little understanding of the “healthy commercial development cycle”.**

Certainly NOT a problem is:

1. **Lack of donor money or customers in rural areas.**

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Misunderstanding of Product Capability:

1. Centralized or Decentralized?
2. AC or DC Standard.
3. Consumer product or Utility

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Solar has the capacity to perform:

- | | |
|--|---|
| <input type="checkbox"/> Centralized | <input checked="" type="checkbox"/> DeCentralized |
| <input type="checkbox"/> AC Standard | <input checked="" type="checkbox"/> DC Standard |
| <input checked="" type="checkbox"/> Consumer Product | <input type="checkbox"/> Utility |

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Multidimensional Subsidy Goals:

A big mistake that often is made is that too many goals are tried to be achieved at the same time....

To name a few:

- **Poverty alleviation**
- **Abolishment of child-labor**
- **Emancipation**
- **Battery Recycling**

.....and many more issues

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Multidimensional Subsidy Goals:

Although we very much agree that these issues are good social values;

BUT we should not burden an upcoming business that is still in infant stage with such heavy tasks.....

It is generally known that electrification has a positive influence on the quality of life and the other values automatically can be developed with it.....

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Lack of Commercial Sustainability:

Subsidy is normally meant to stimulate a development that is considered to have a positive effect on society but is commercially not or not yet feasible.

It is of course always most wishful that subsidy can be stopped as soon as development can continue on its own through a “commercial engine”.

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Lack of Commercial Sustainability:

Than why is it that policymakers for subsidy seem to seldom take the commercial viability of projects into consideration?

Or demand that a well commercial spin-off is achieved....?

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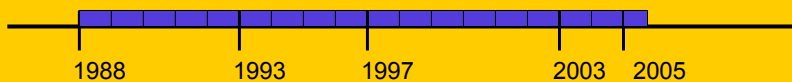
Lack of Commercial Sustainability:

Our observations are that the project designers:

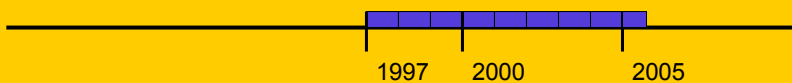
- Have often too little or no experience with the working of *“the healthy commercial product development cycle”*
- Or sometimes are too idealistic and hope to be able to change human nature....

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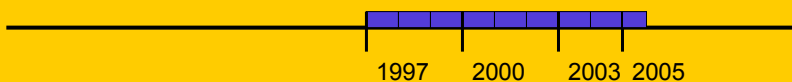
Indonesia Experience



Srilanka Experience



Africa (Kenya) Experience

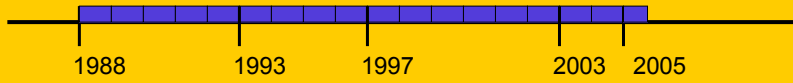


General Experience in rest of the world

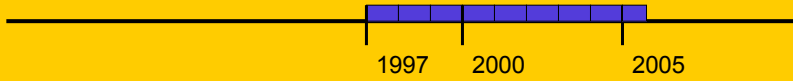


Sundava

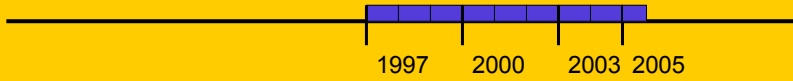
Indonesia Experience



Srilanka Experience



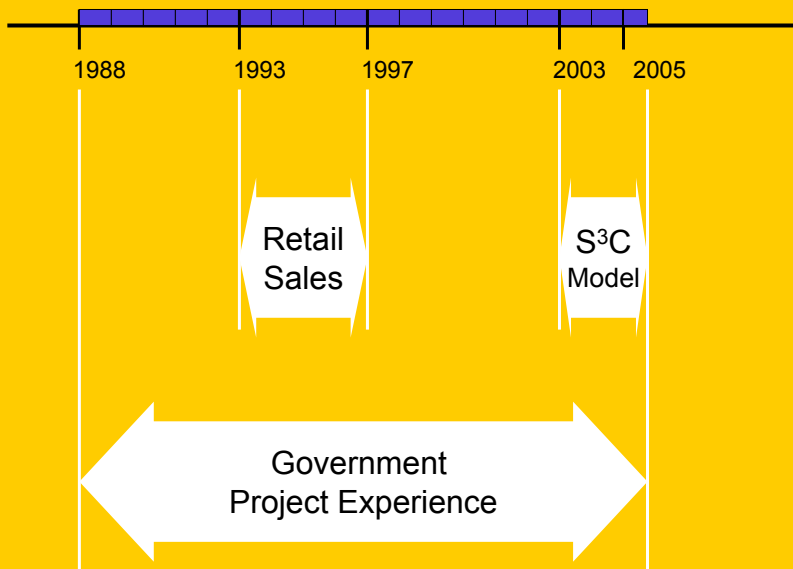
Africa (Kenya) Experience



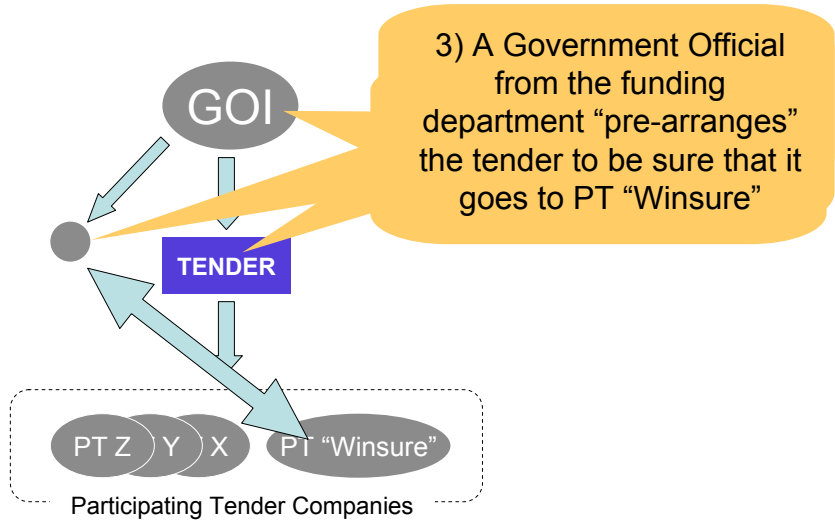
General Experience in rest of the world



Indonesia Experience

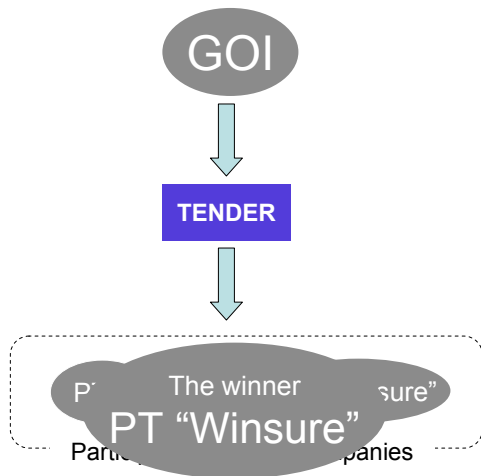


Indonesia's SHS government project Modus Operandi



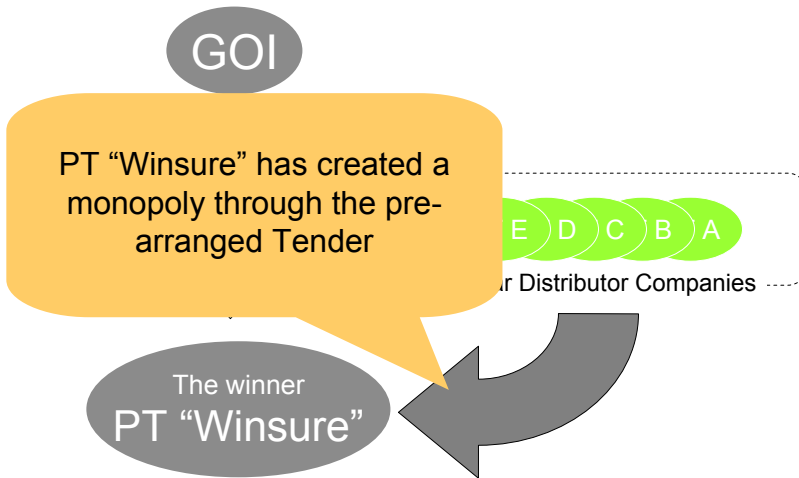
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Indonesia's SHS government project Modus Operandi



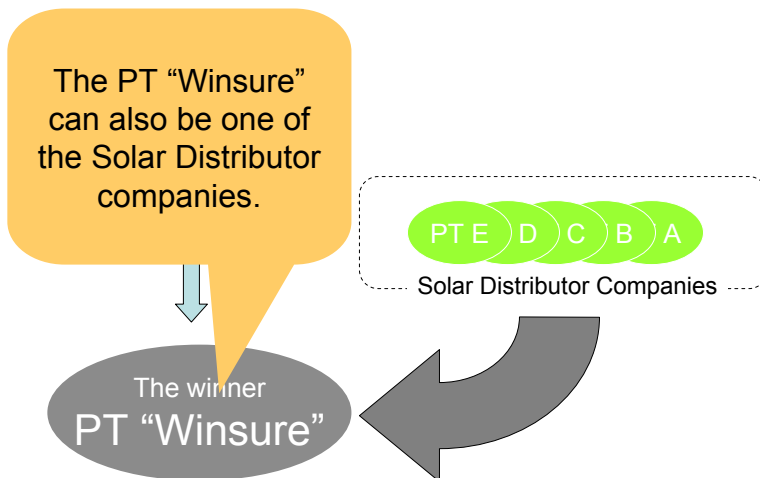
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Indonesia's SHS government project Modus Operandi



Sundava

Indonesia's SHS government project Modus Operandi



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Indonesia's SHS government project Modus Operandi

The Solar Distributors can buy their products either from Sundaya, or the many other manufacturers in India or China

Sundaya
China
India

Manufacturers

PTE D C B A

Solar Distributor Companies

The winner
PT "Winsure"

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Indonesia's SHS government project Modus Operandi

GOI

Budget \$805,-/set

TENDER

Tender Winner Price \$800,-/set

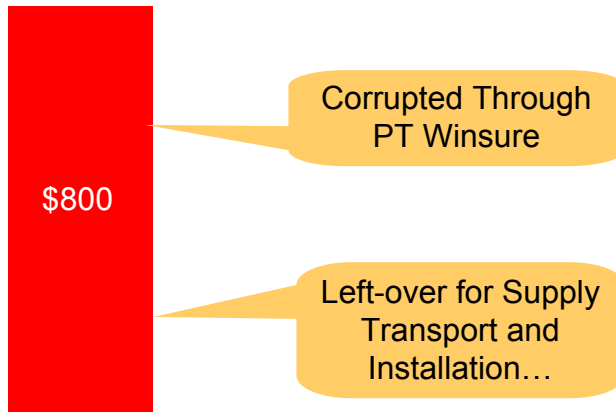
"Winsure" Buying Price \$350,-/set

The winner
PT "Winsure"

Margin \$450,-/set

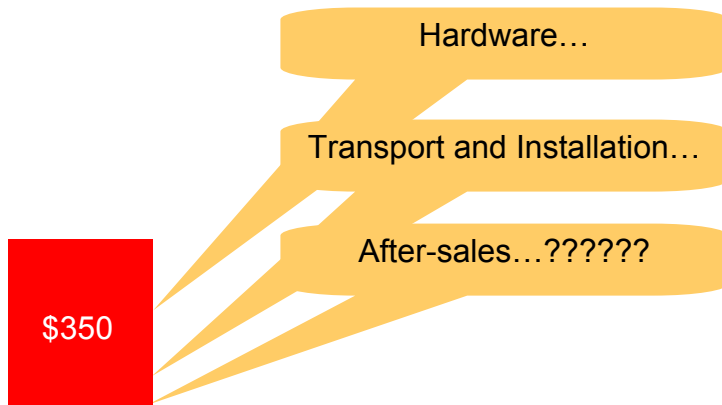
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Indonesia's SHS government project Modus Operandi



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Indonesia's SHS government project Modus Operandi



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Through this Indonesian business MO the following "positive" effects have been achieved:

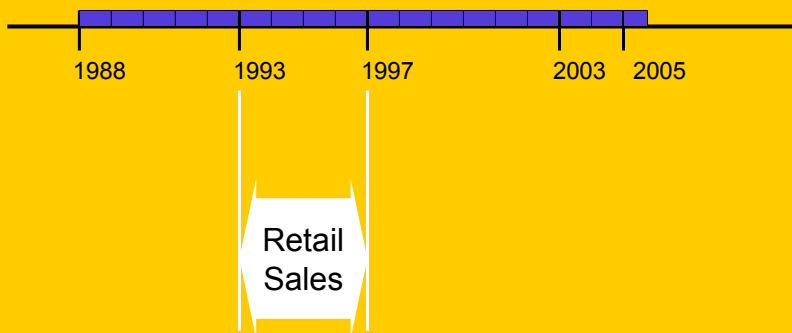
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- No
- No sense of ownership
- No service network established
- A general perception is grown among the rural population that solar home systems don't work.

**Conclusion:
A very sad result.....
And waste of \$160 million...**

Indonesia Experience



Monthly Energy Cost

- Kerosene for Lamps \$7,-
 - Battery for TV \$3,-
 - Drycell batterries \$2,-
-

•Total \$12,-

Solar System Cost (1993)

(Investment to replace Monthly cost)

- System Cash Price \$350,-
 - Loan period 3yrs
 - Interest 12%/year
-

Monthly payment \$13,50

Conclusion:
a Solar System was only a bit more expensive
than monthly expenditure on other energy sources

Monthly Energy Cost

- Kerosene for Lamps \$7,-
 - Battery for TV \$3,-
 - Drycell batterries \$2,-
-

•Total \$12,-

Solar System Cost (1993)

(Investment to replace Monthly cost)

- System Cash Price \$350,-
 - Loan period 3yrs
 - Interest 12%/year
-

Monthly payment \$13,50

Based on this economic picture in 1993;
Sudimara started to sell SHS directly to end-users
and it turned out to be very successful.

In the period of 1993 till 1995 Sudimara achieved the following positive effects

- A network of 12 Service Centers was established to sell, service, and collect money from SHS customers.
- No government support was needed.
- Rural Customers turned out to be very reliable customers.
- World bank became interested in the new business model and developed program to support the model with a 240.000 system target.

The Difficulties were:

- No banks were willing yet to support with funding
- Worldbank was willing to support but first wanted more companies to join the new business model (multi dimensional goals of subsidy)
- Existing companies were unwilling as they preferred to continue existing MO

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Sundava

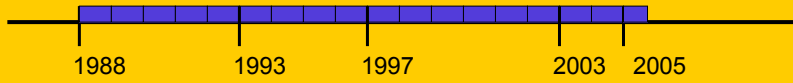
In the period of 1995 till 1998 Sudimara struggled on:

- Worldbank project kept being delayed
- Sales was difficult to sustain without financing
- Other distributors continued the normal Government projects
- in 1997 Economic Crisis started
- The local currency lost value from Rp2.400/\$ to Rp17.000/\$
- Fuel prices only increased by 10-20%
- Solar systems suddenly became 500% more expensive
- Sales came to a hold
- Company went bankrupt.....

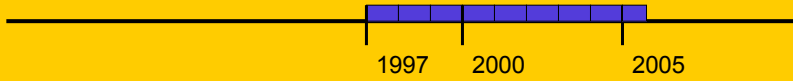
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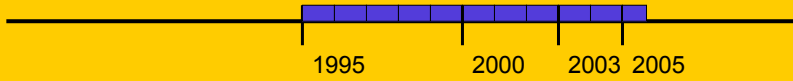
Indonesia Experience



Srilanka Experience



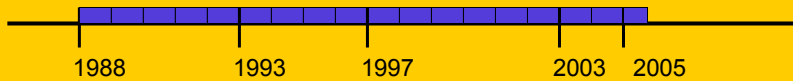
Africa (Kenya) Experience



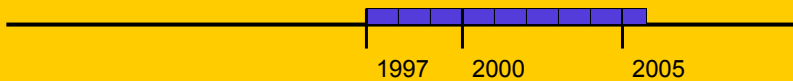
General Experience in rest of the world



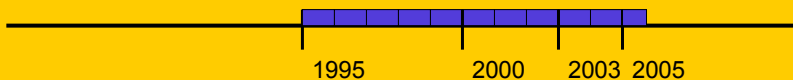
Indonesia Experience



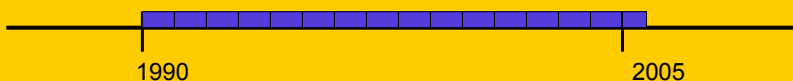
Srilanka Experience



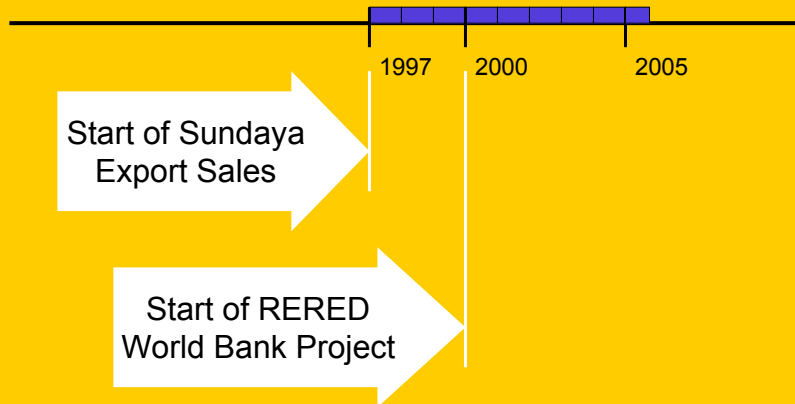
Africa (Kenya) Experience



General Experience in rest of the world



Srilanka Experience



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Srilanka RERED project 2000-2005

Monthly Energy Cost

•Kerosene for Lamps	\$7,-
•Battery for TV	\$3,-
•Drycell batteries	\$2,-
<hr/>	
•Total	\$12,-

Solar System Cost (2000)

(Investment to replace Monthly cost)

•System Cash Price	\$600,-
•Downpayment	\$50,-
•Loan period	3yrs
•Interest	12%/year
<hr/>	
Monthly payment	\$21,-

Conclusion:
a Solar System was 75% more expensive
than monthly expenditure on other energy sources

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Start of Project in Y 2000

Commercial System Pricing



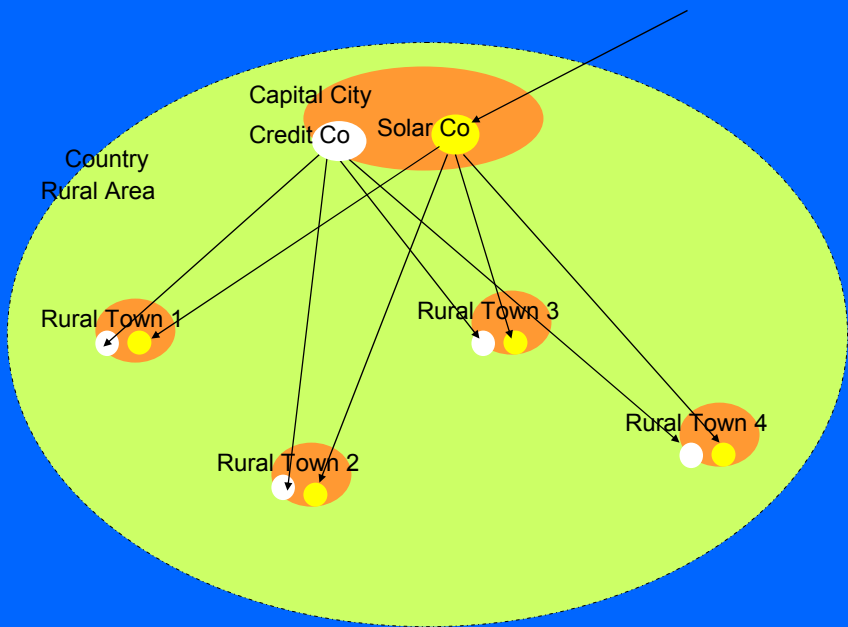
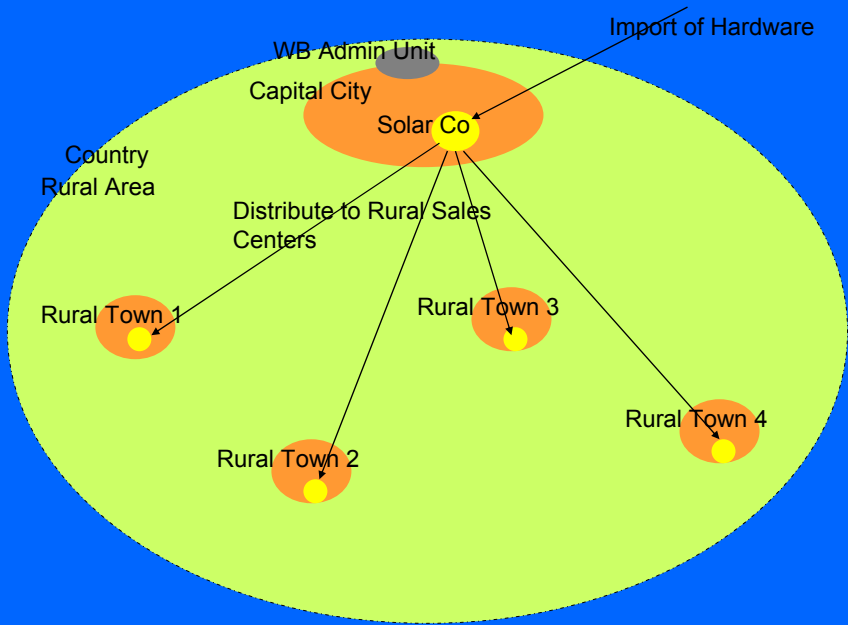
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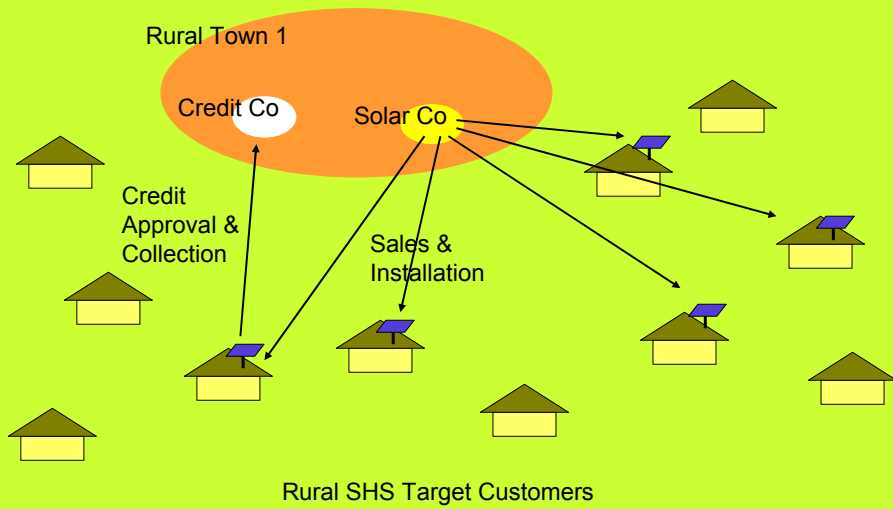
Start of Project in Y 2000

GEF Subsidy



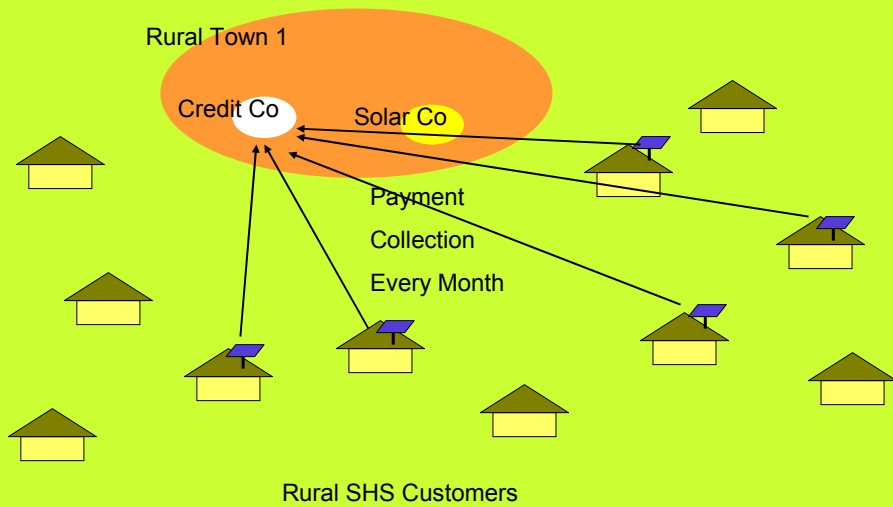
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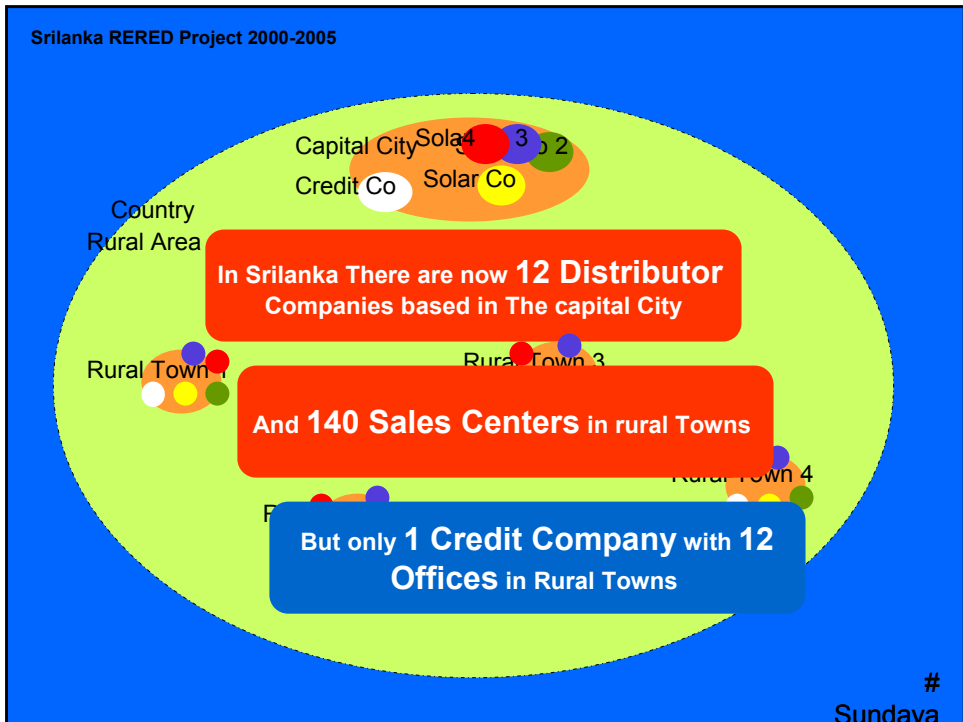
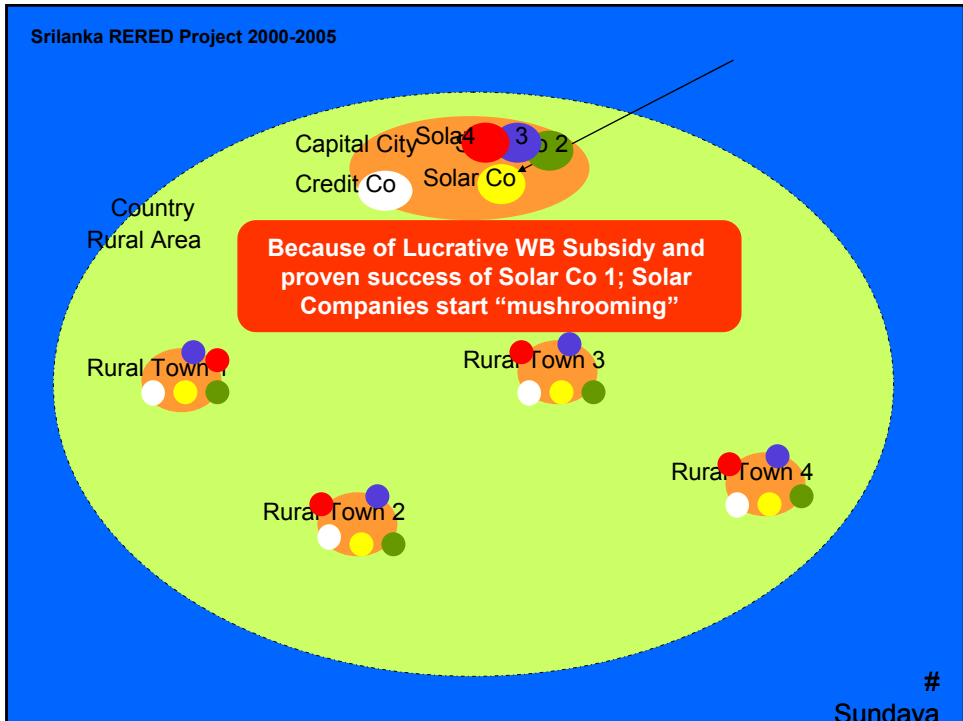
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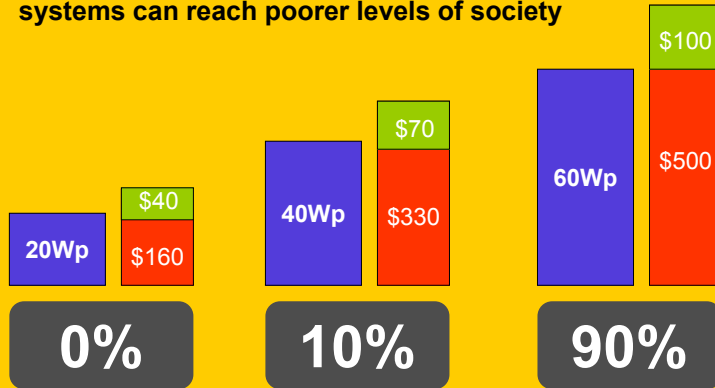
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Market Share / product (2003)

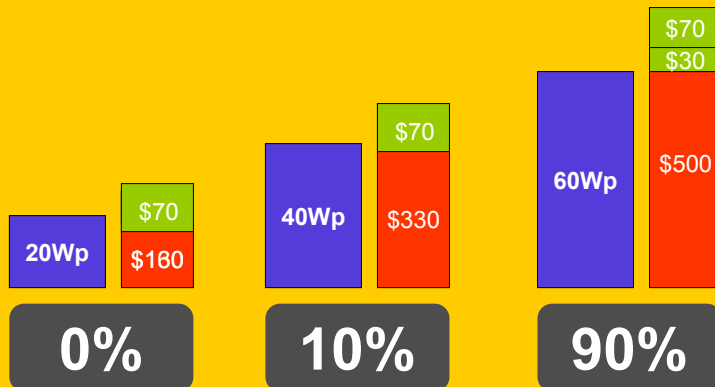
- This result made World Bank Unsatisfied;
- Because WB prefers to see that more Smaller systems can reach poorer levels of society



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Market Share / product (2003)

- And so it was decided to reduce subsidy on bigger systems and add to smaller system



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Market Share / product (2004)

•What did this do to the market share of each product?

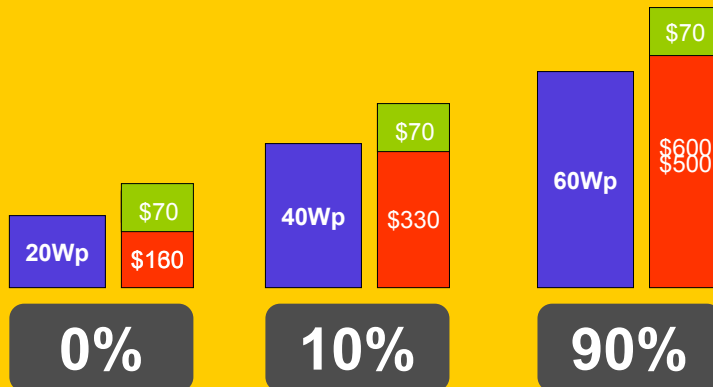
•It stayed exactly the same !!!



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Market Share / product (2004)

•And thus World bank decided to stop completely with the subsidy on "BIG" systems



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Market Share / product (2004)

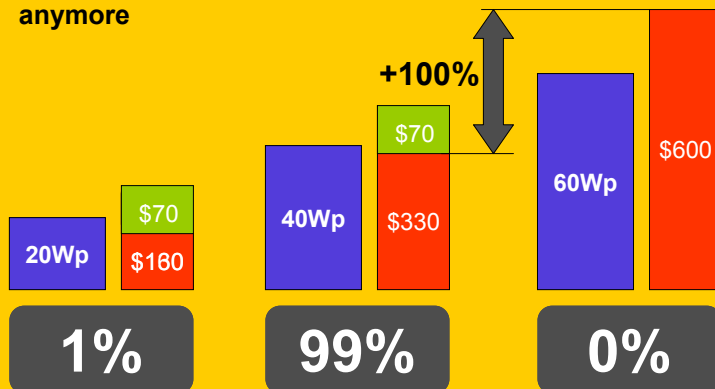
- Now “finally” the new policy had an effect !!!
- An almost 100% higher price for only 50% more capacity



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Market Share / product (2005)

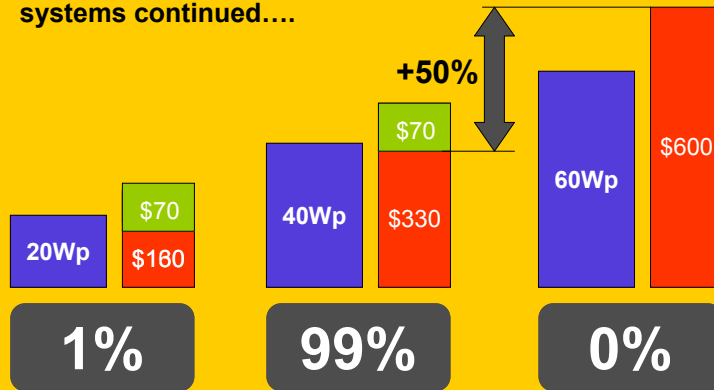
- What did this do to the market share???
- Nobody was interested in the “BIG” system anymore



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Market Share / product (2005)

- Was this the goal of the policy???
- No....The WB had hoped sales of "BIG" systems continued....

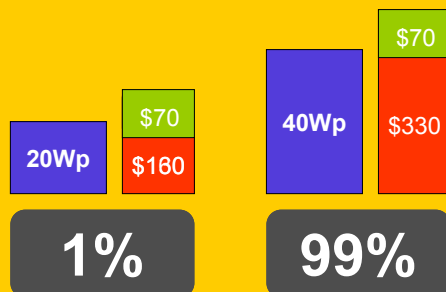


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Market Share / product (2005)

- In the same period solar panel prices had increased by 20-30% due to an over 300% subsidy scheme in Germany



Results:

- Dissatisfaction about system performance
- Payment performance went down
- Customers wanted to return their systems

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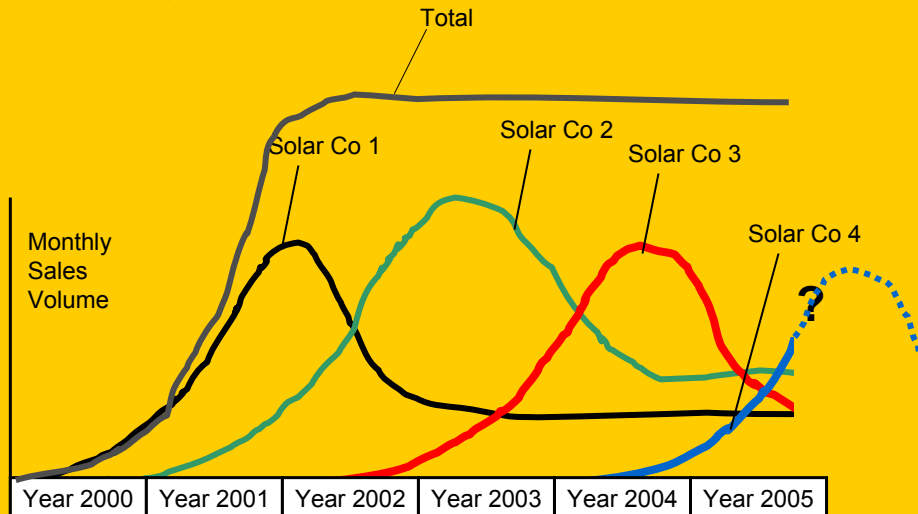
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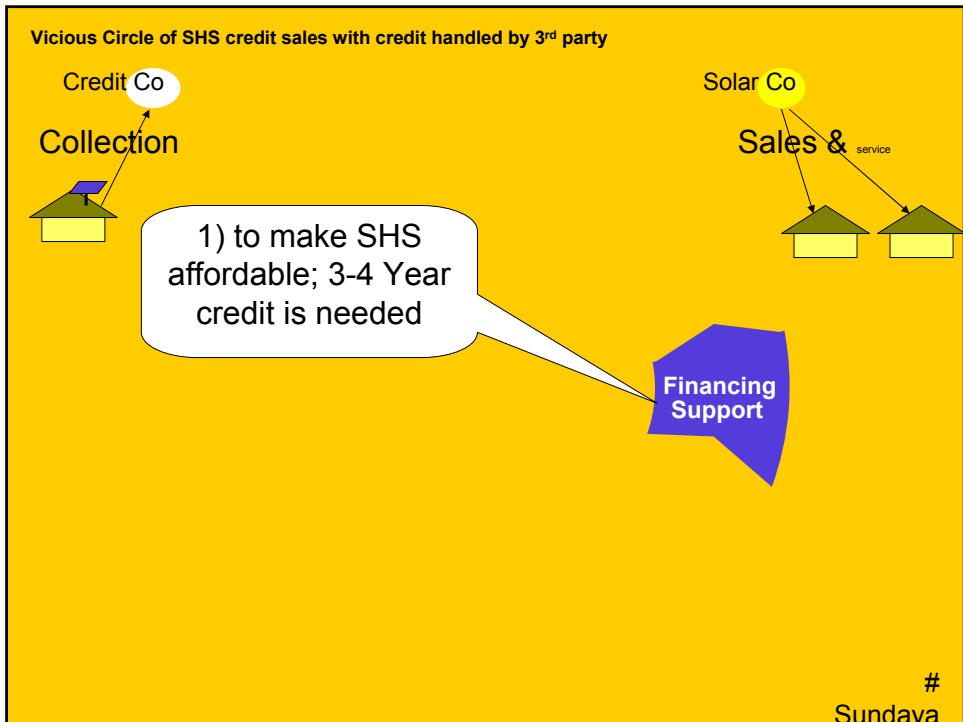
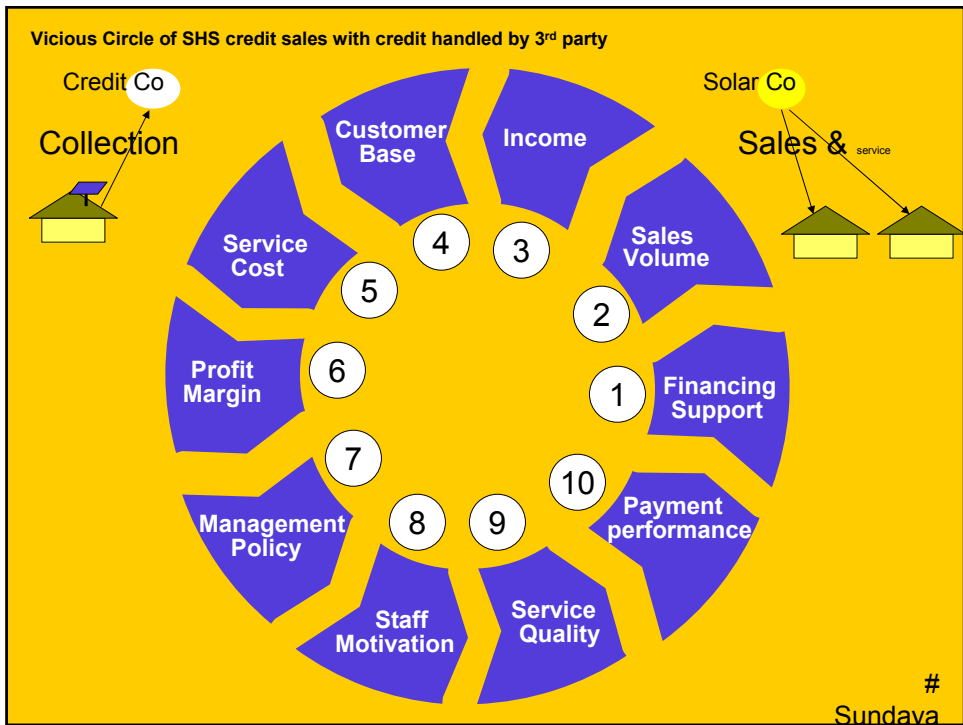
Through the Srilanka RERED project the following positive effects have been achieved:

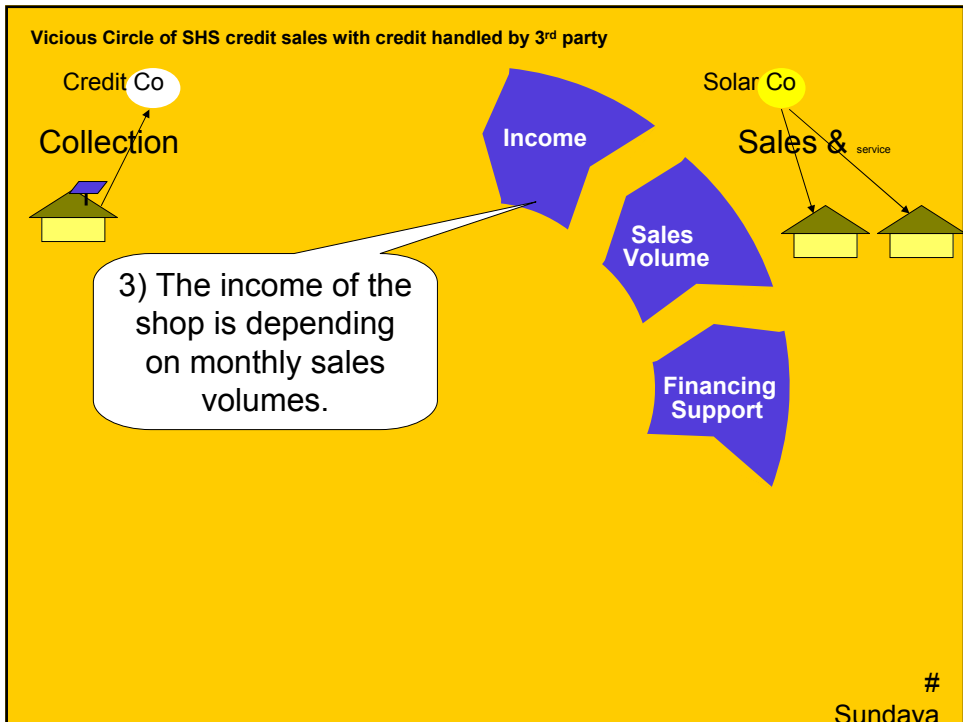
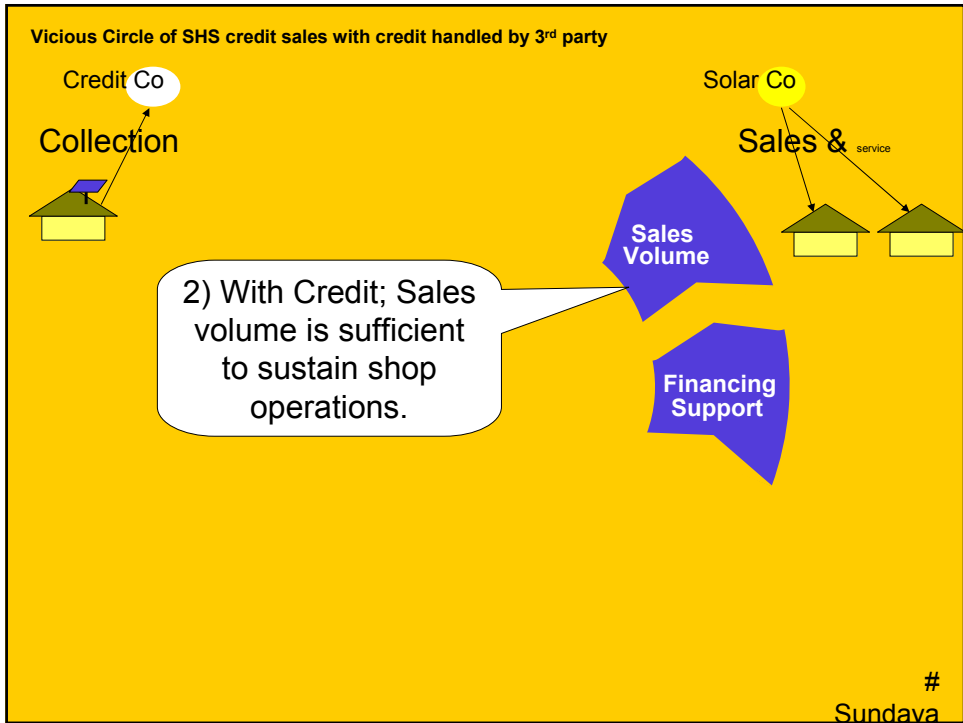
- +/- 90.000 SHS installed in rural areas
- 12 Solar Distributor Companies got established with a total of 140 Sales centers employing in total 2000 people.

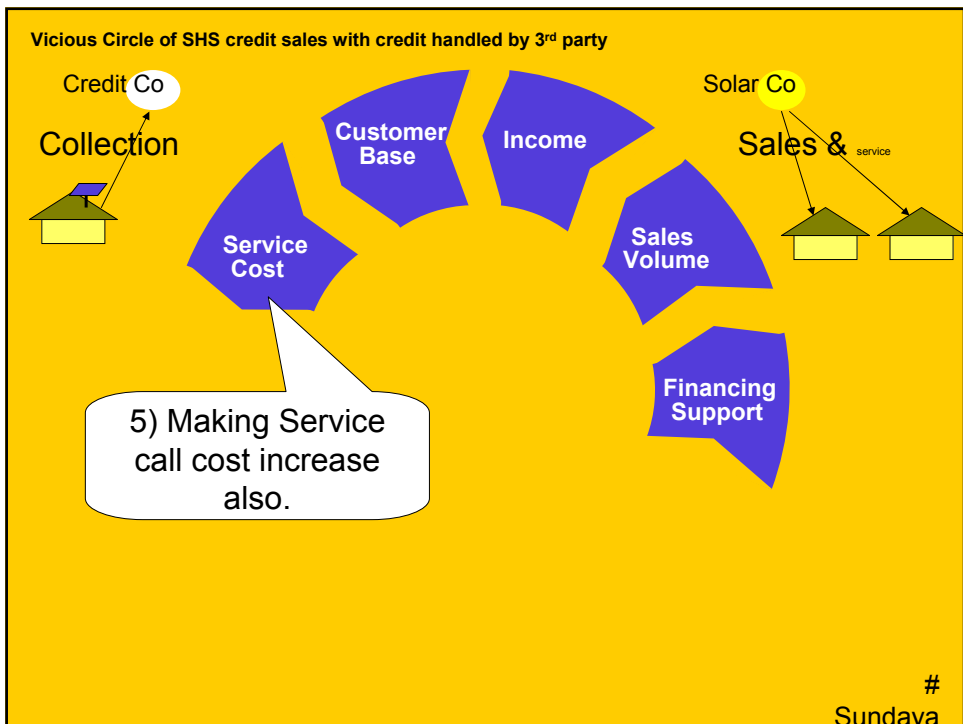
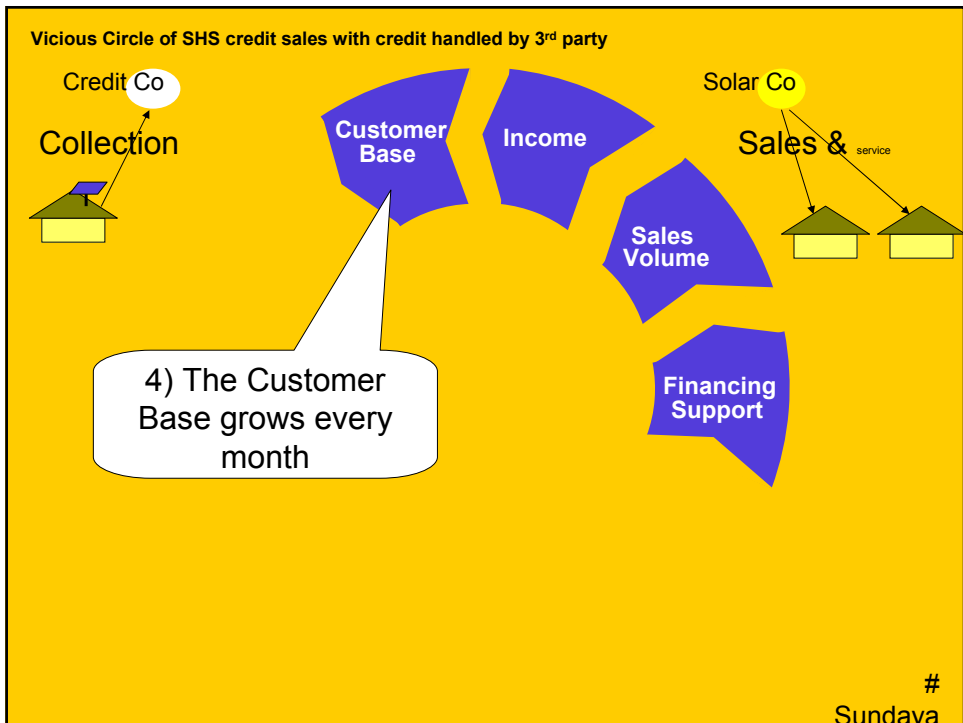
The Negative effects are:

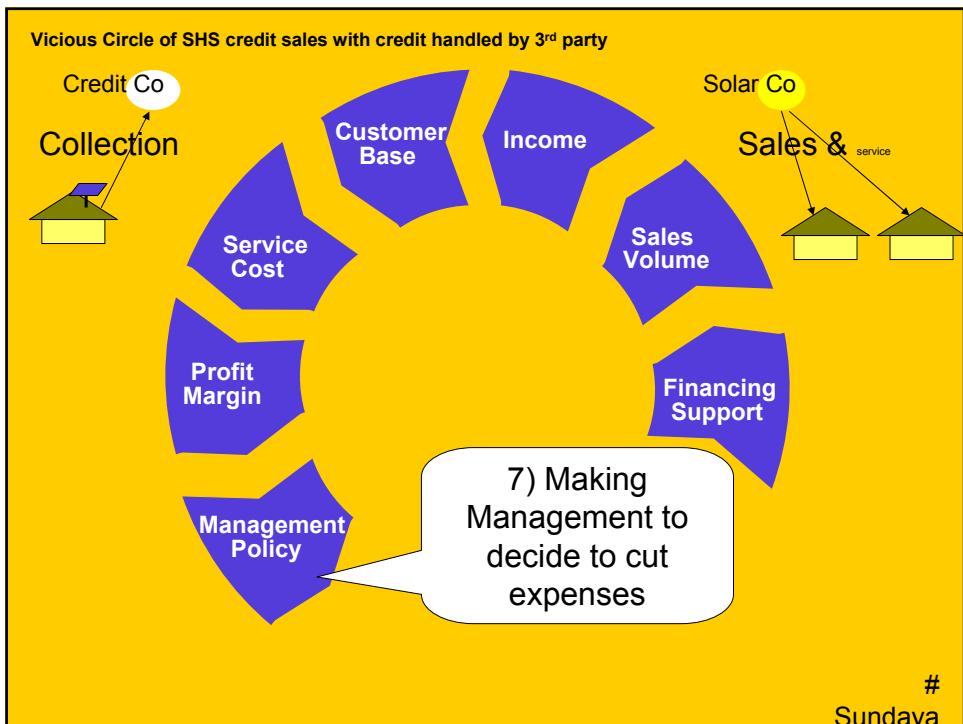
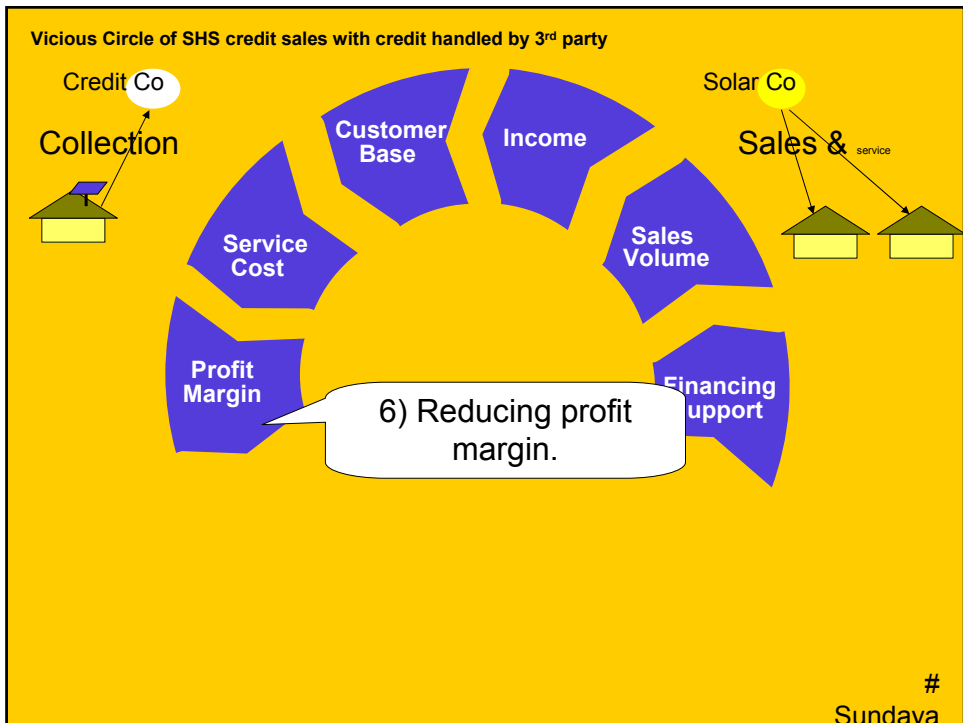
- Distributor companies performance is not stable
- Credit Company has a monopoly
- Discriminative subsidy makes SHS unattractive again
- Companies can quickly come up make money and disappear

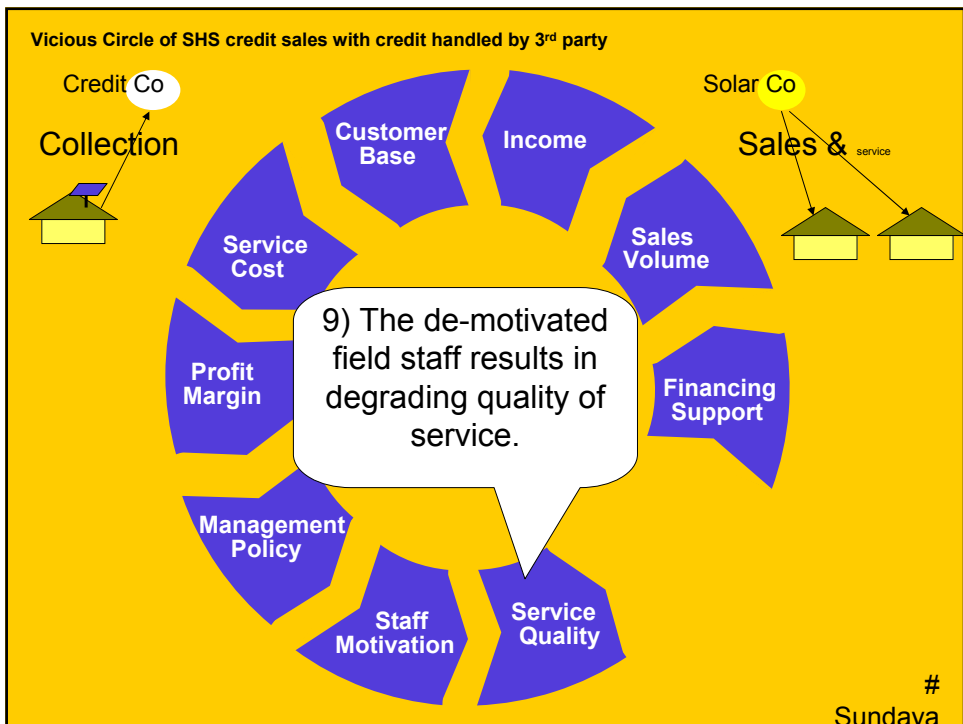
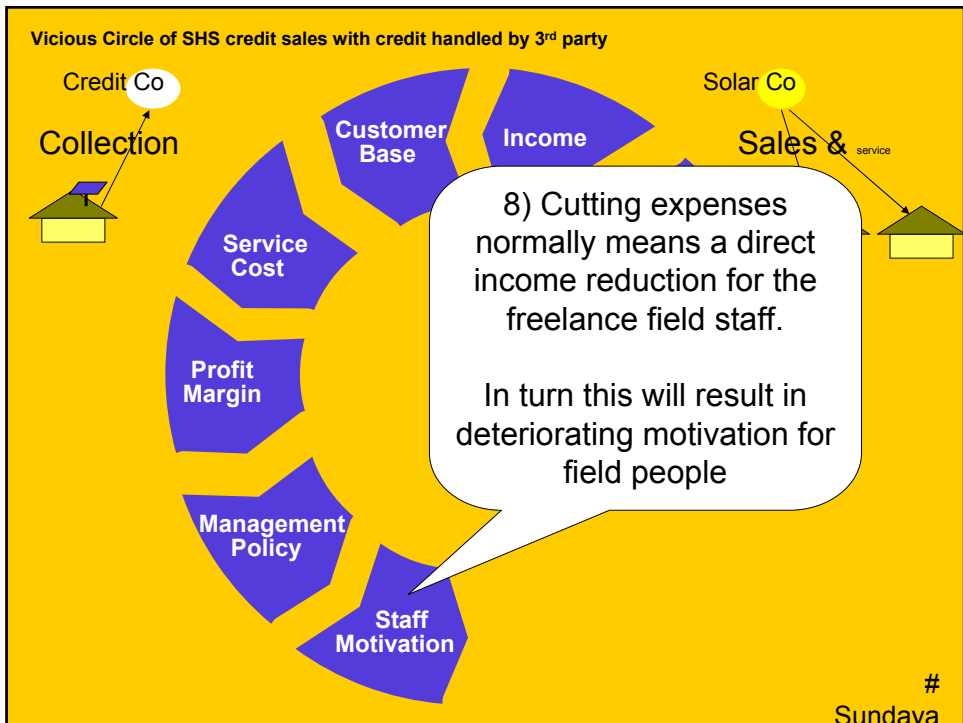


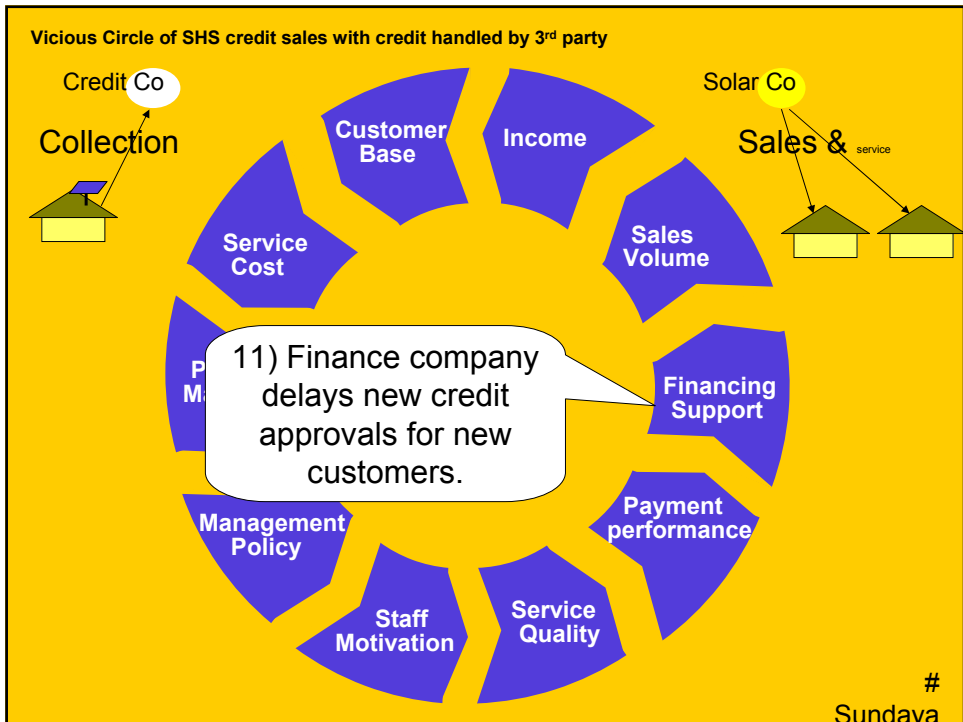


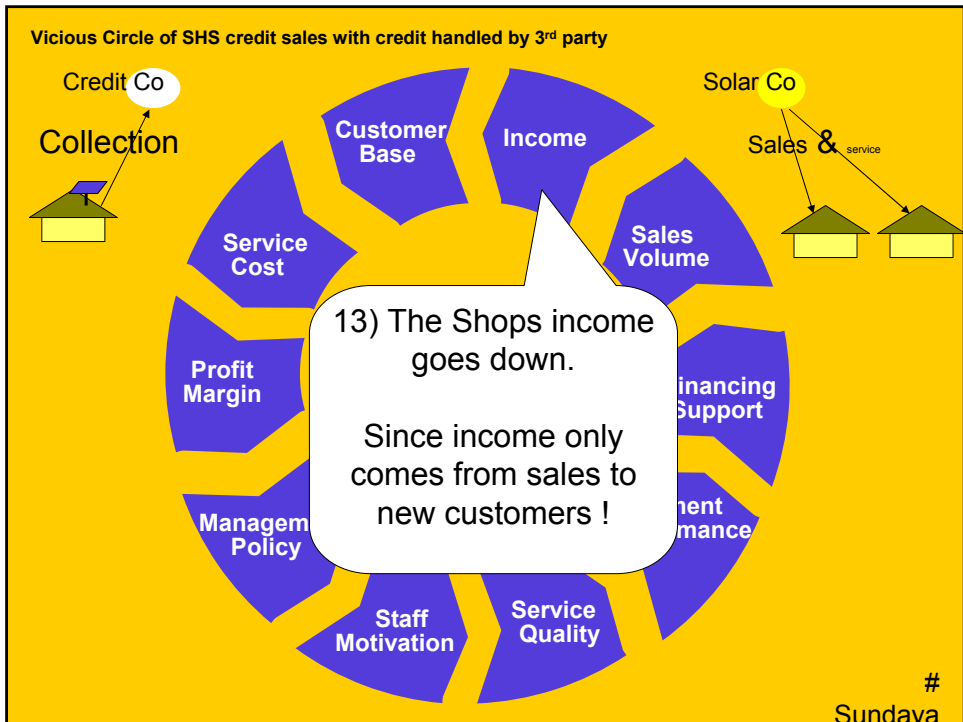
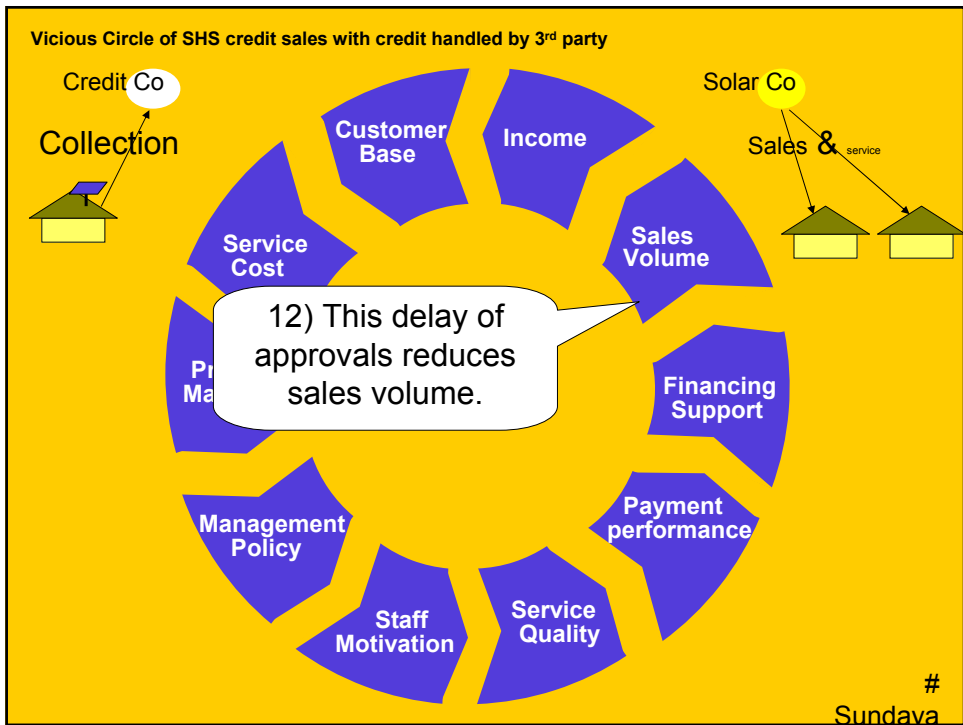


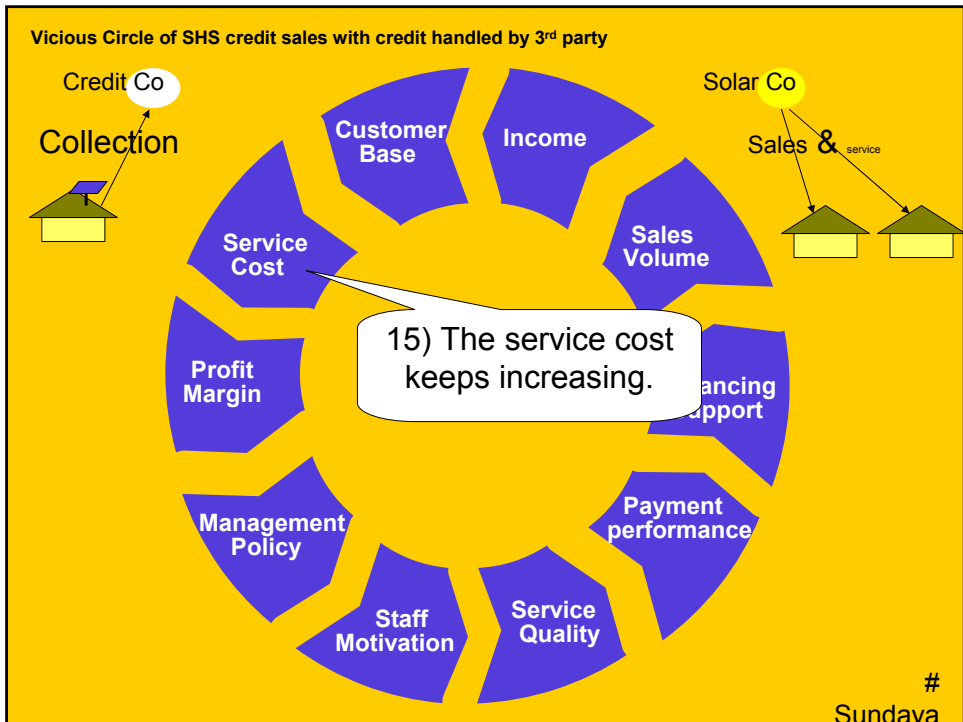
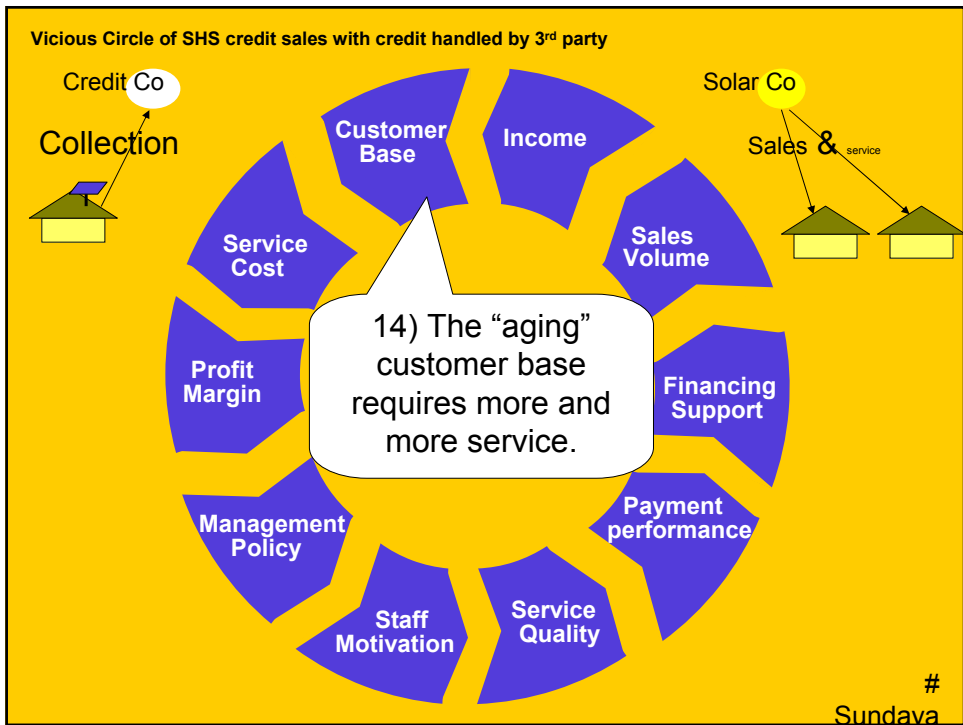


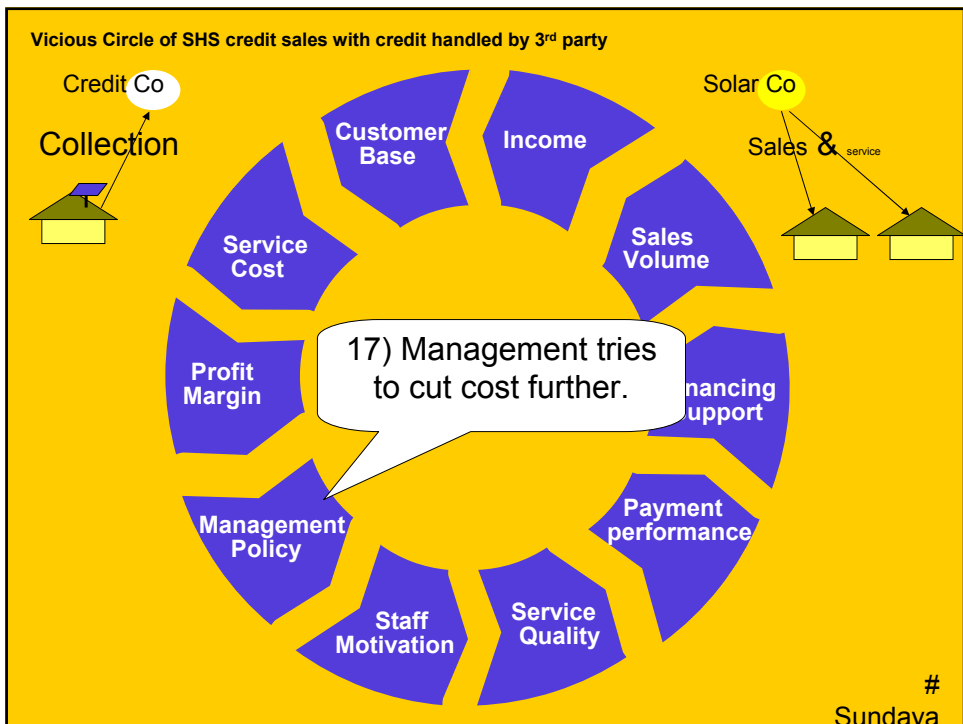
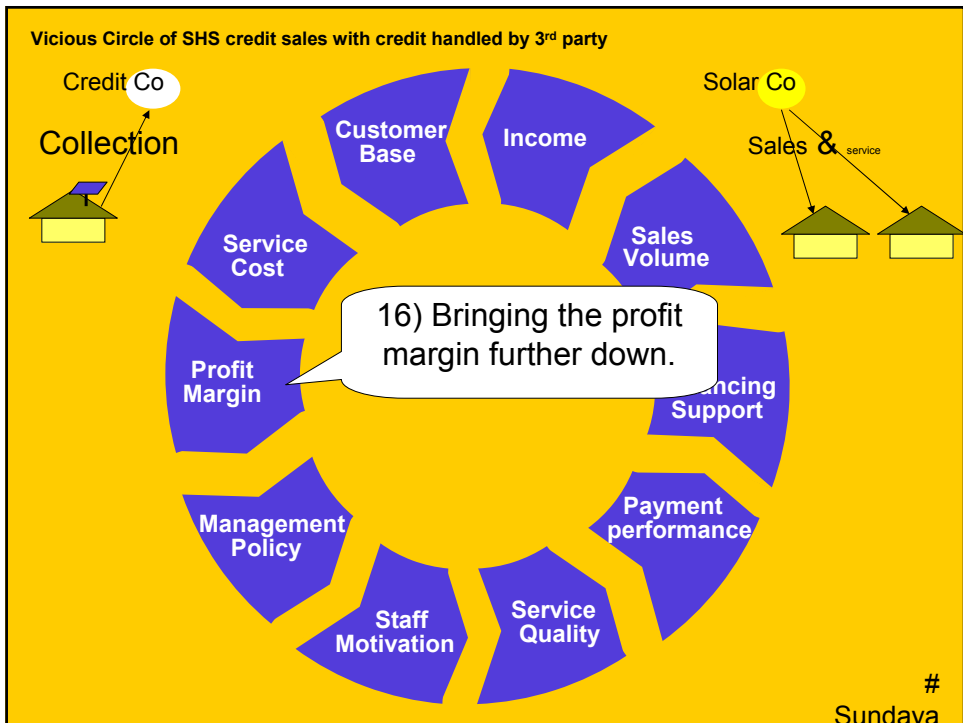


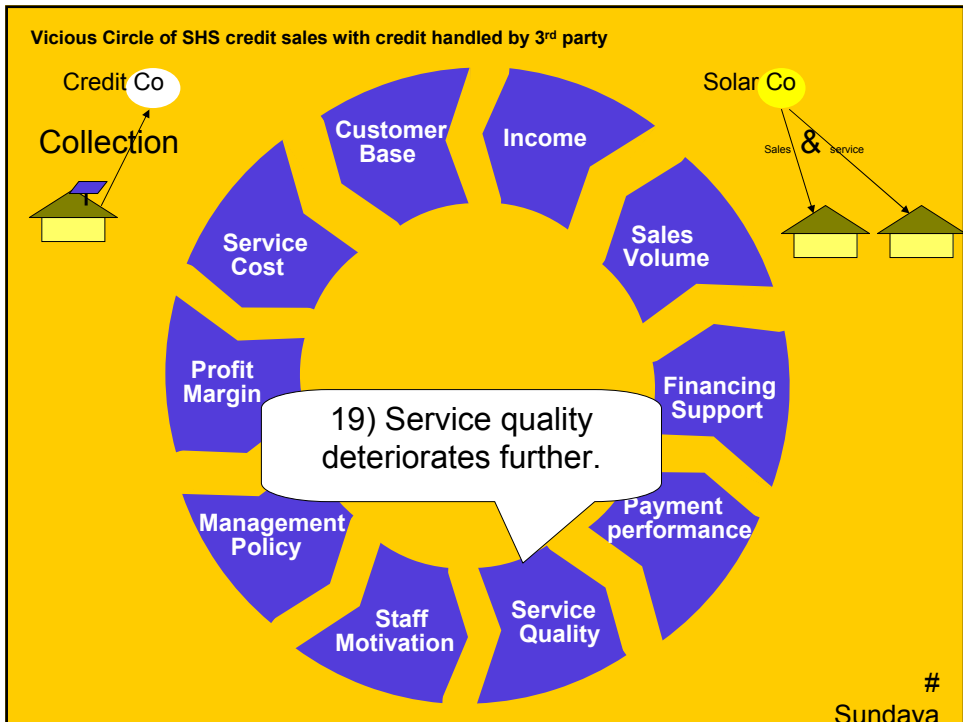
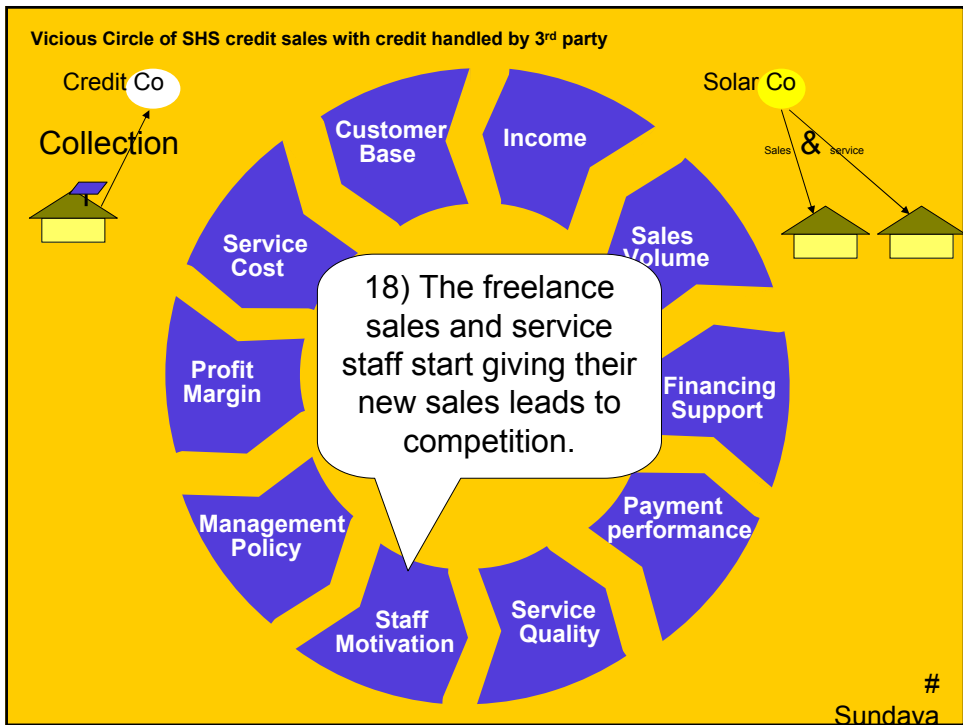


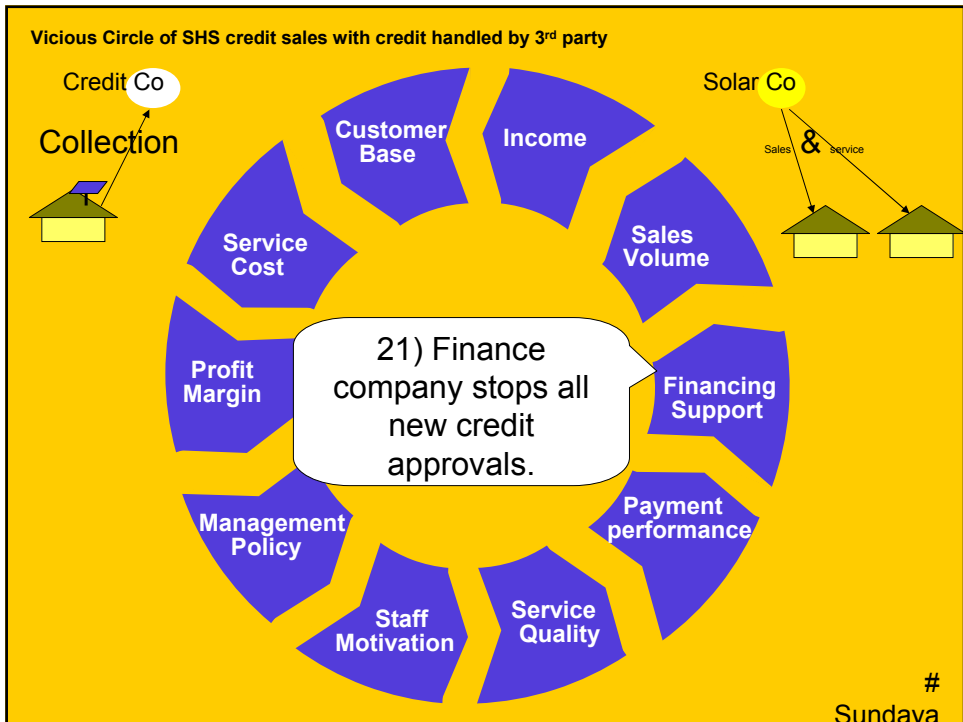
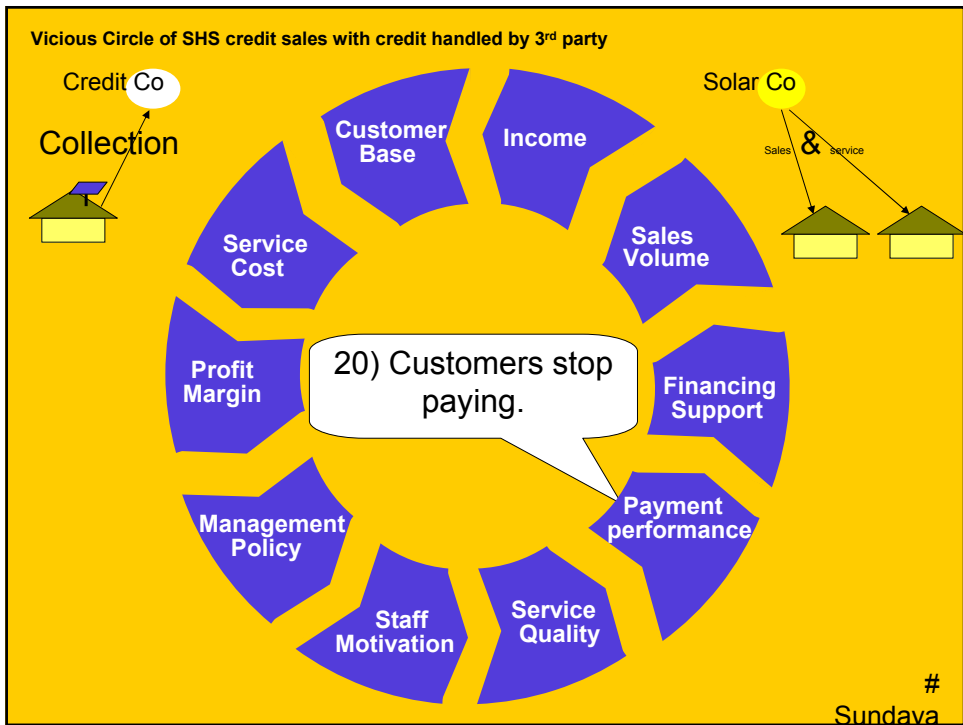


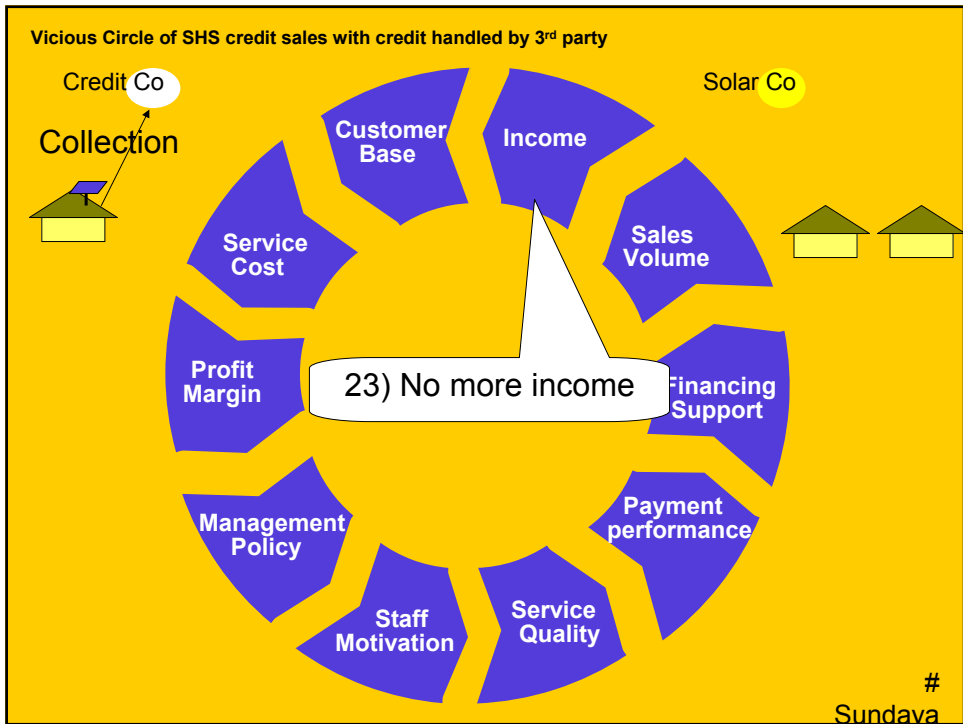
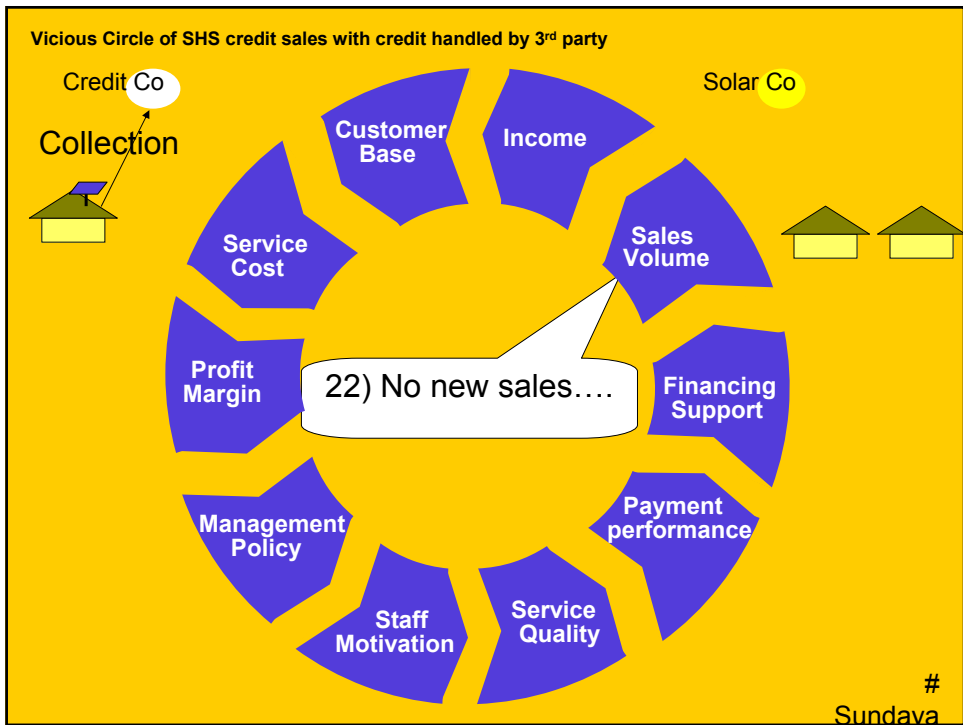


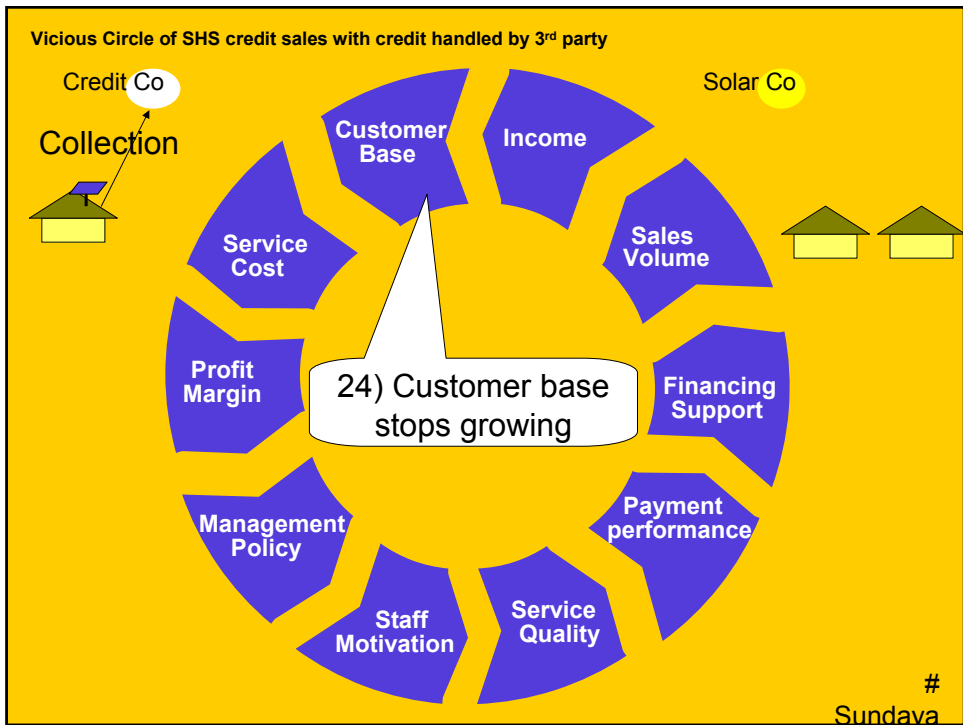


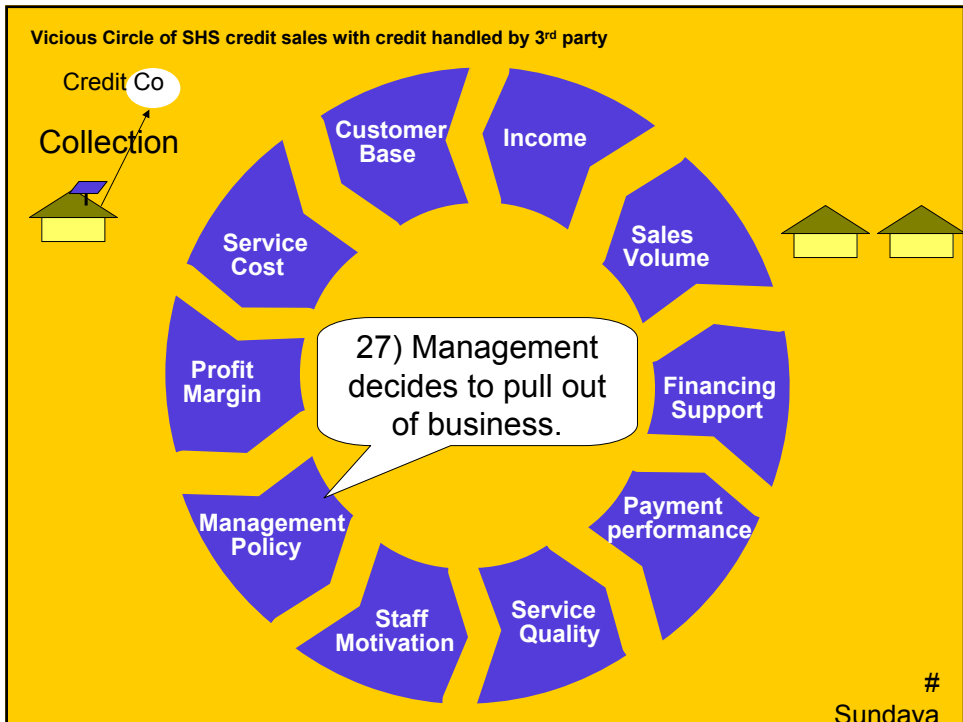
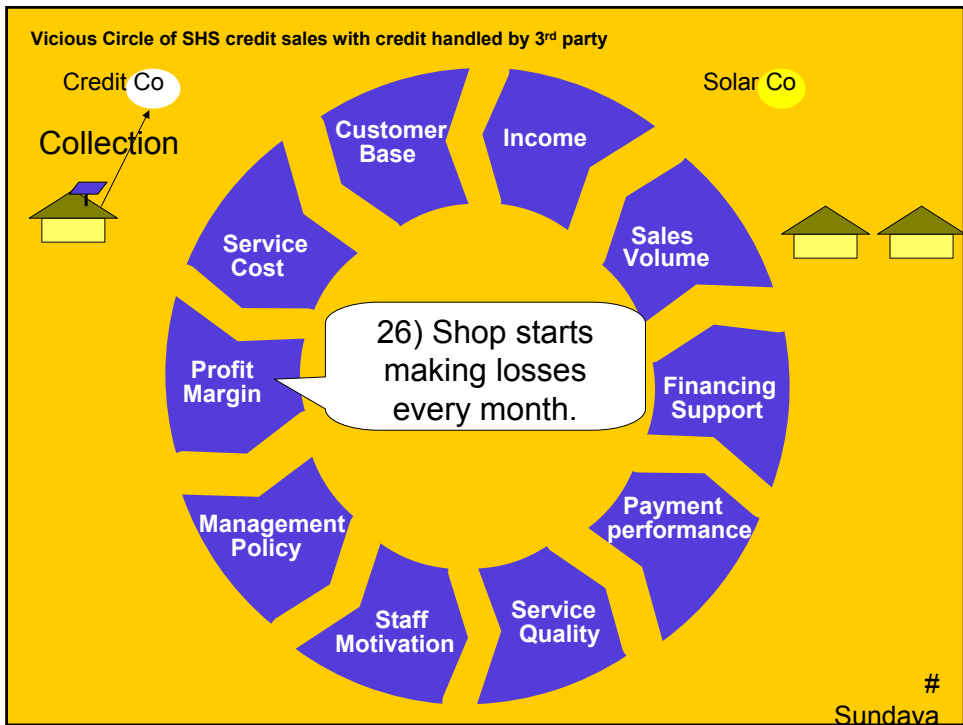


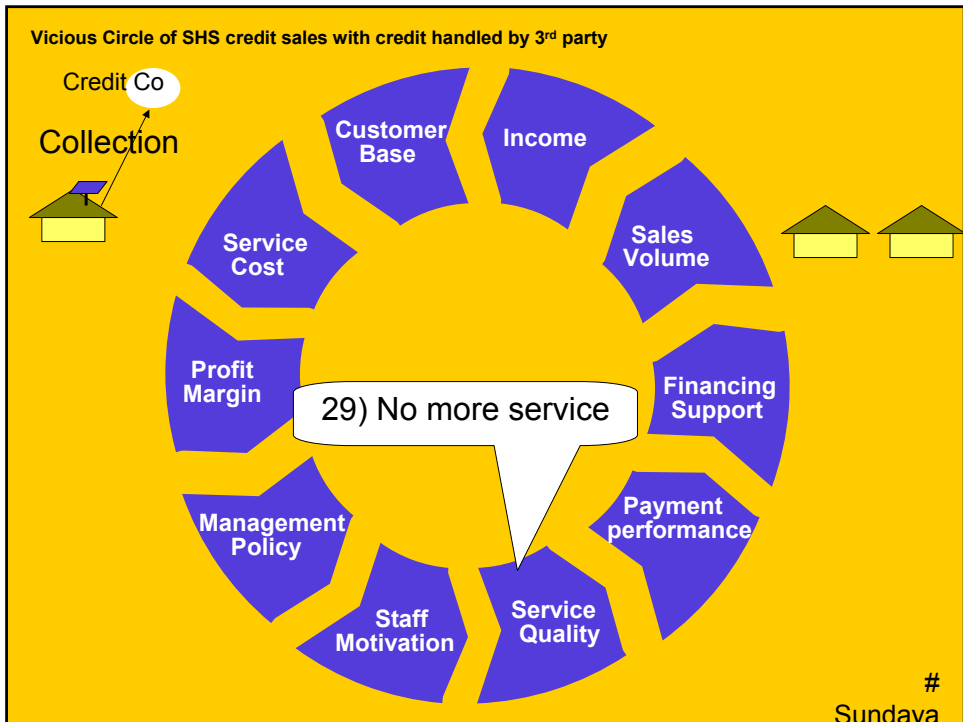
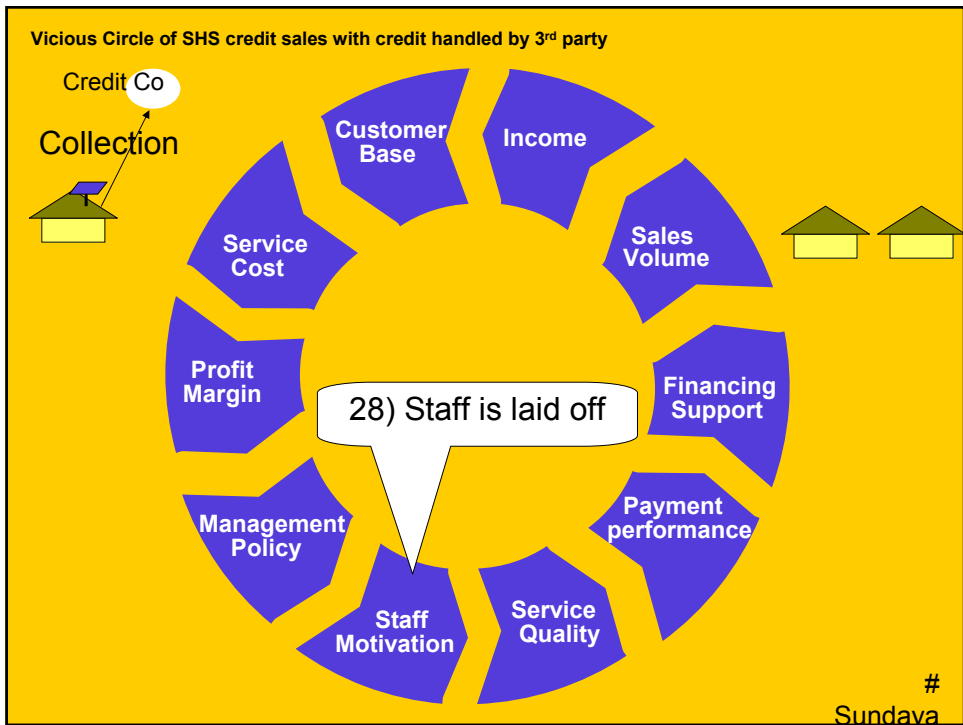


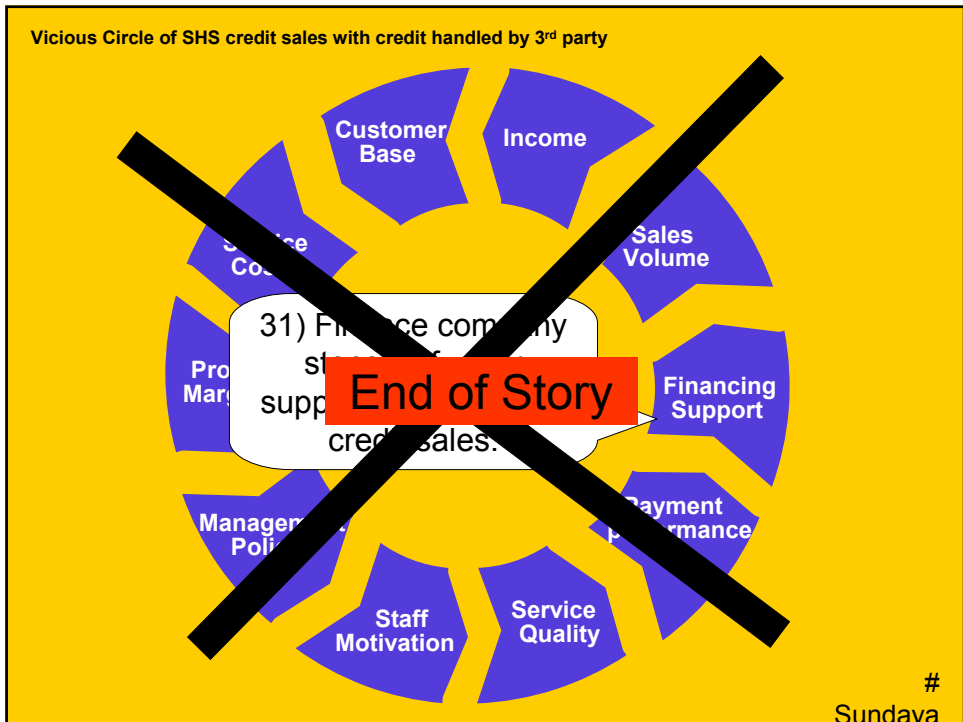
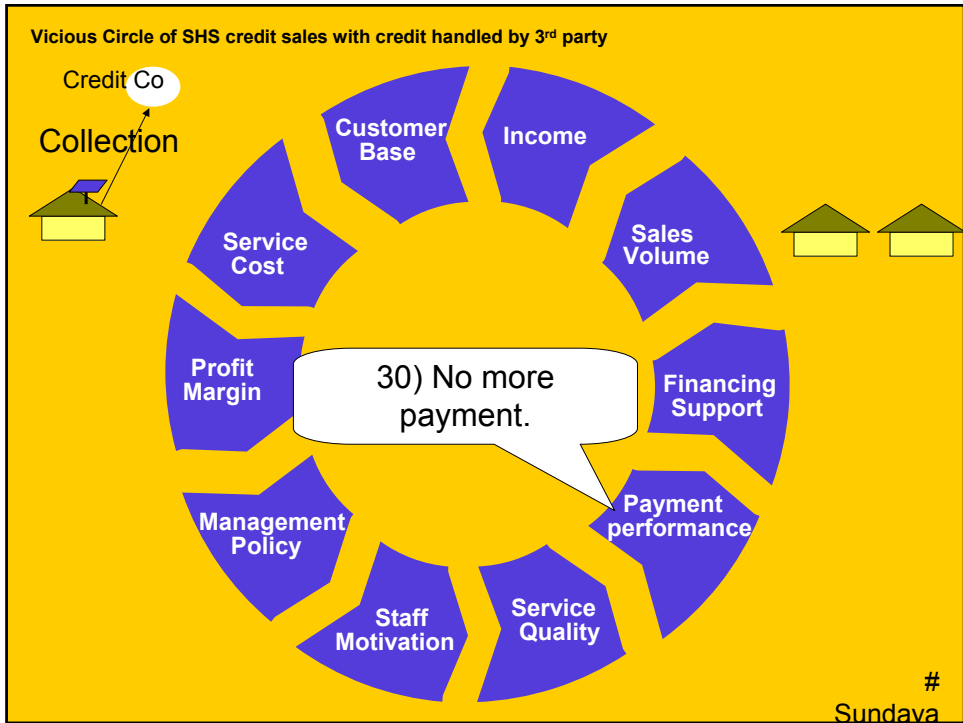












1) In Sundaya's S³C business model of course also Financial support is needed to finance Hire Purchase sales

Financing Support

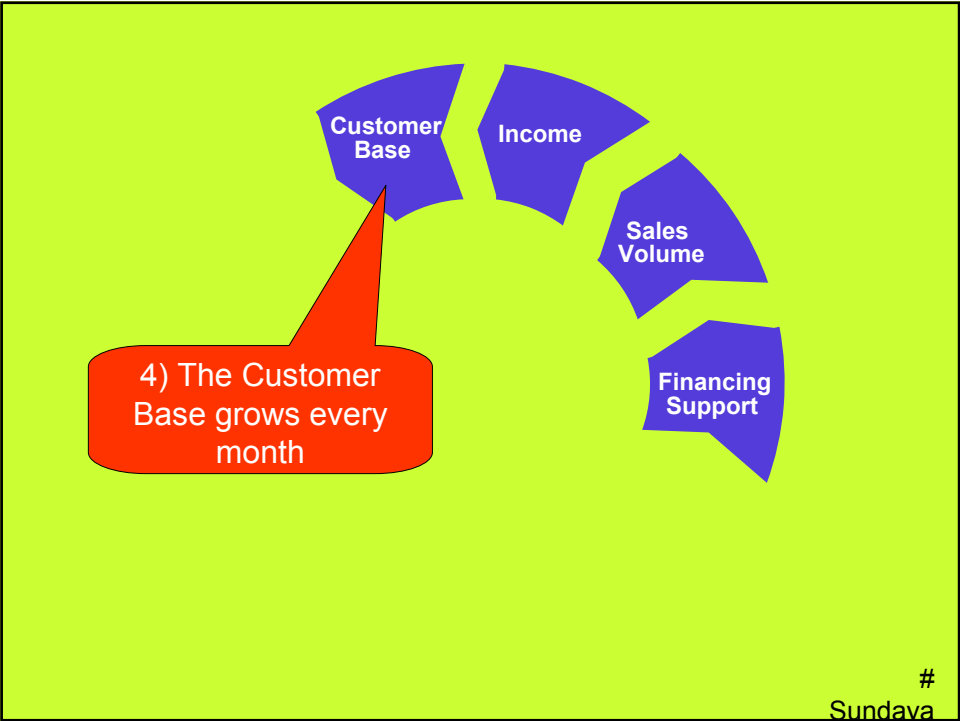
Sundaya

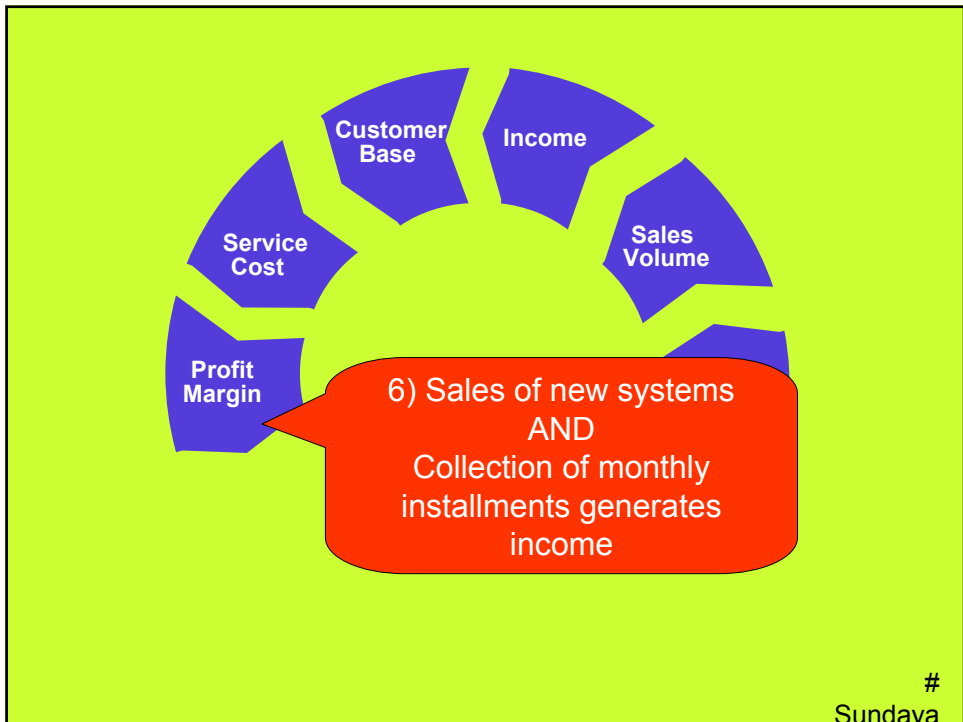
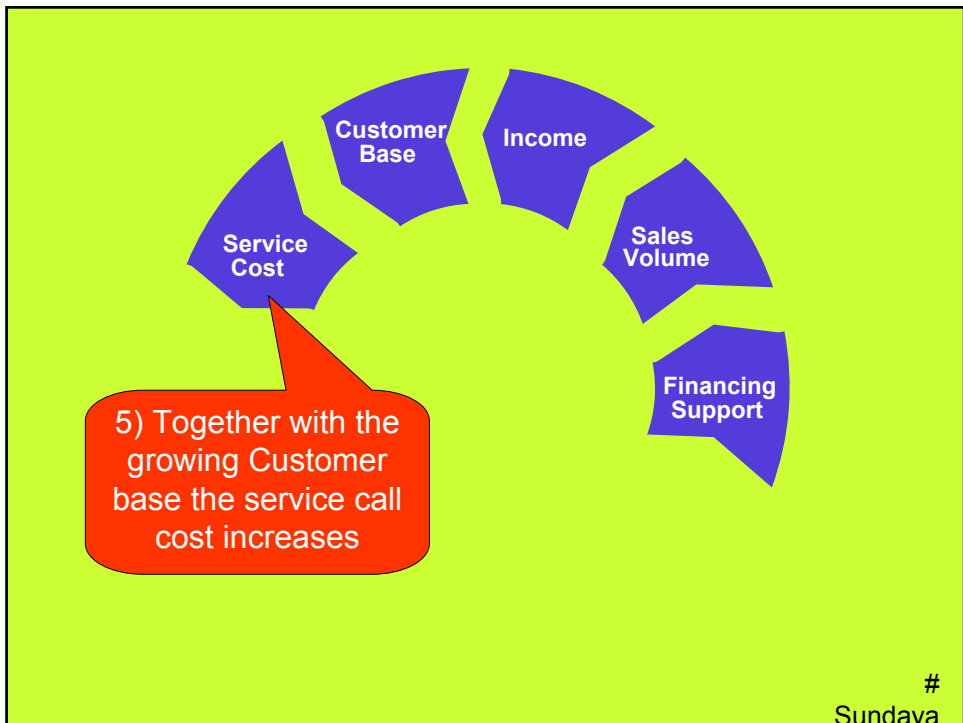
2) ONLY than Sales Volume can reach sufficient volume to sustain shop operations.

Sales Volume

Financing Support

Sundaya



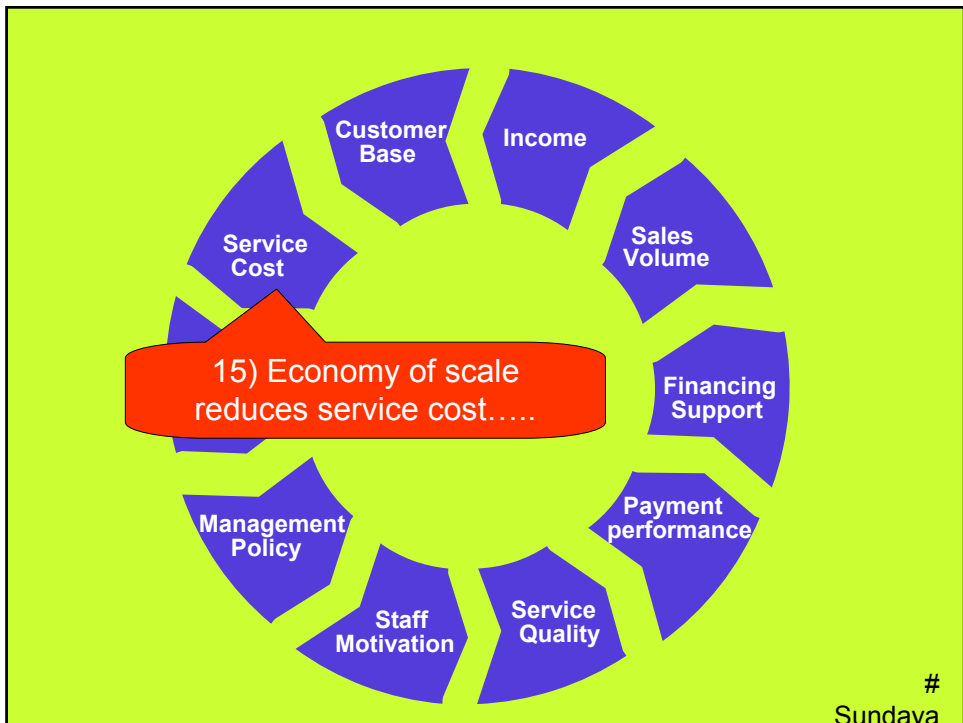


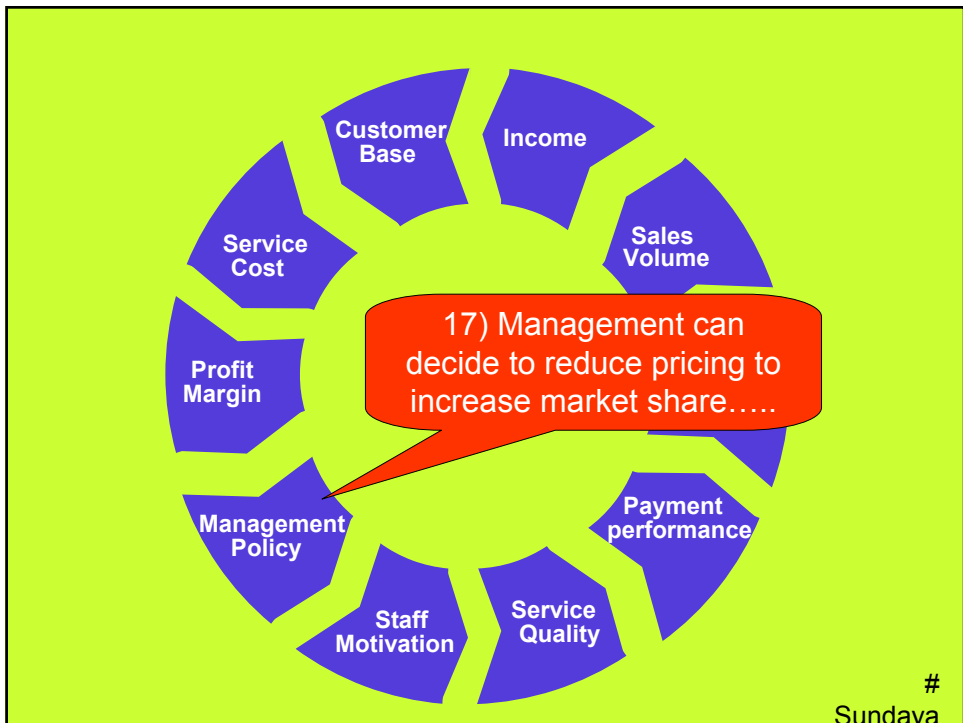














Sundava

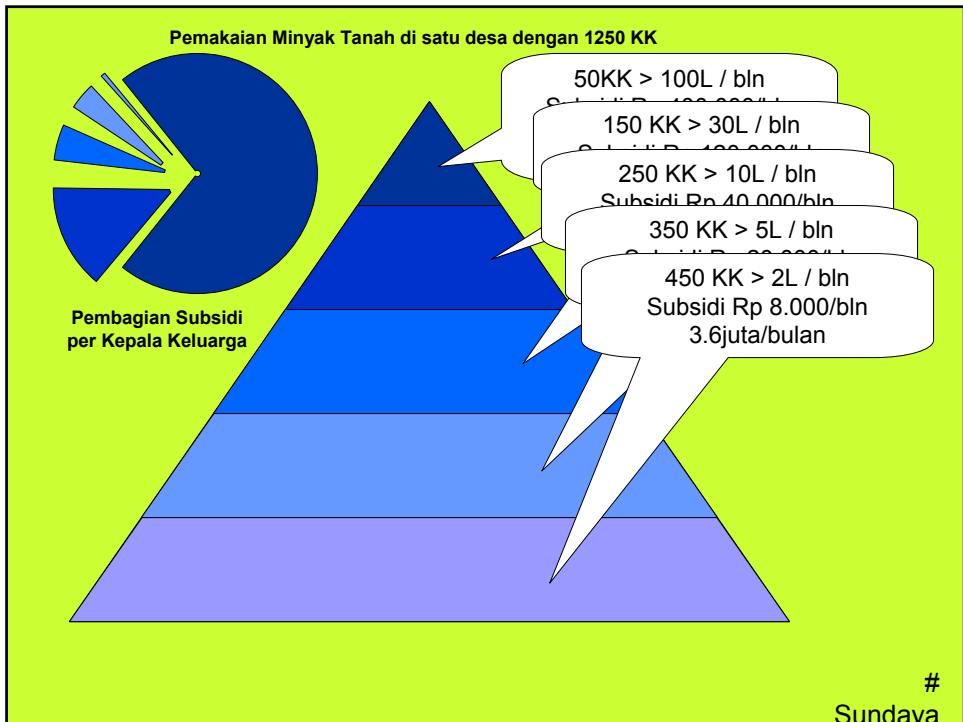
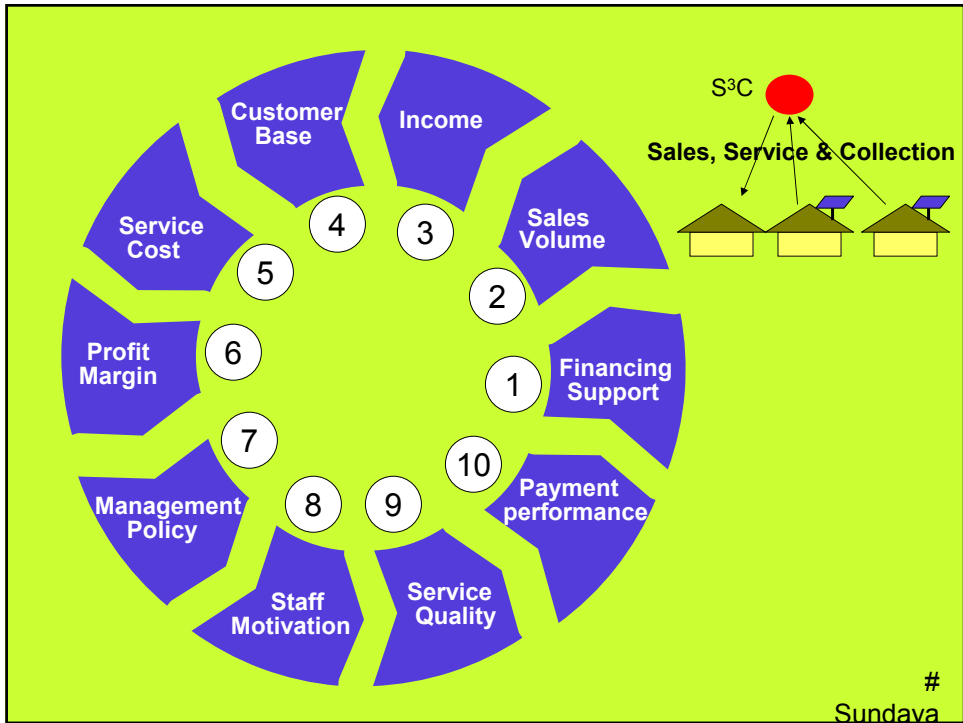


Sundava









Biaya Konsumen

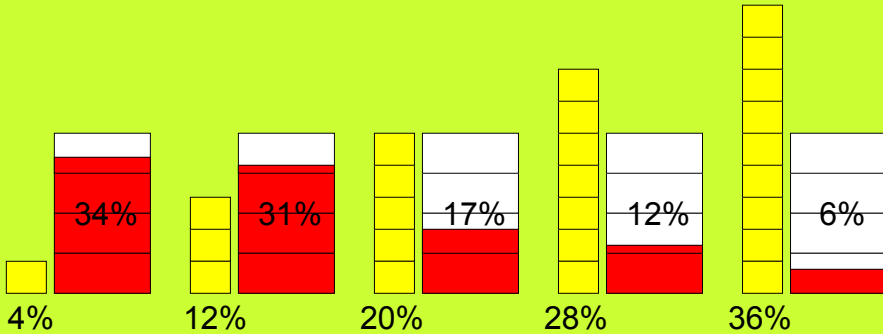
100.000 30.000 10.000 5.000 2.000

Biaya Subsidi Pemerintah

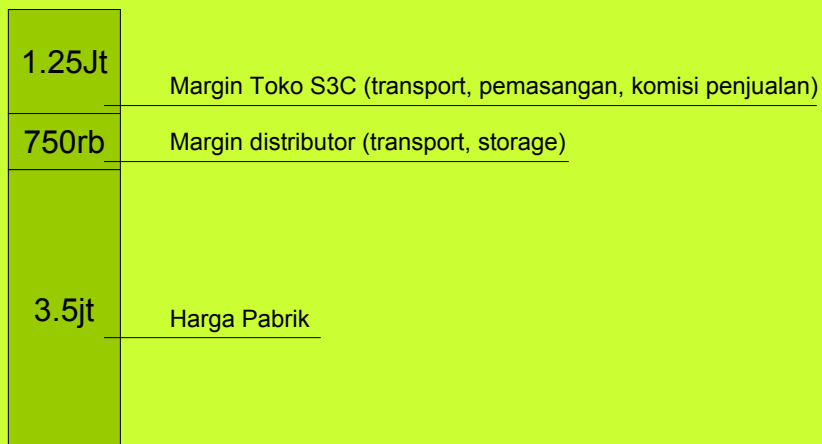
400.000 120.000 40.000 20.000 8.000

20juta 18juta 10juta 7juta 3.6juta

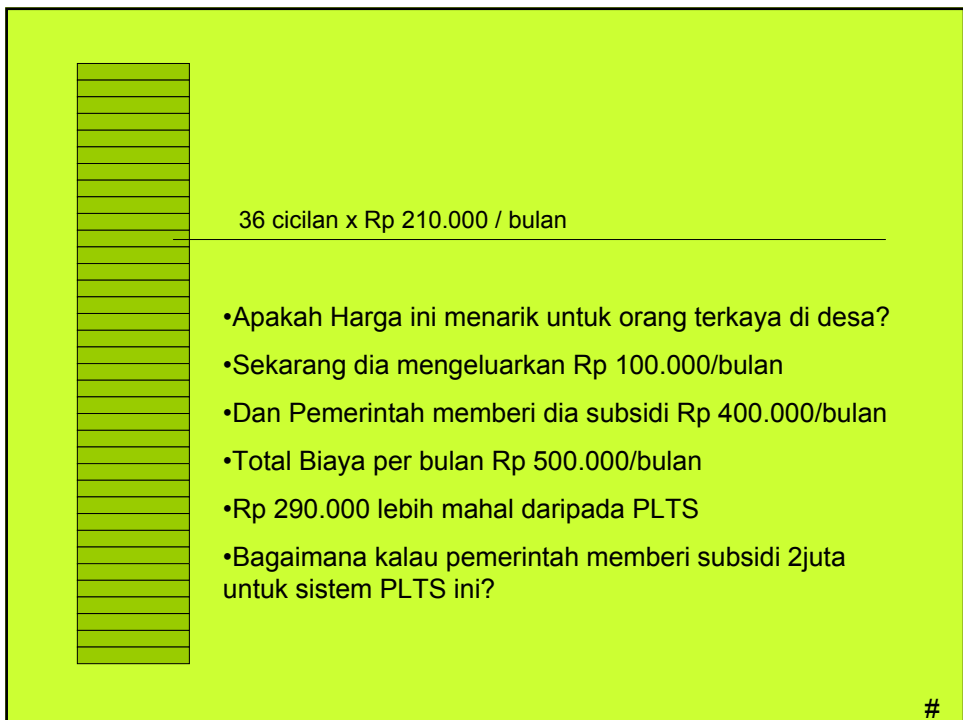
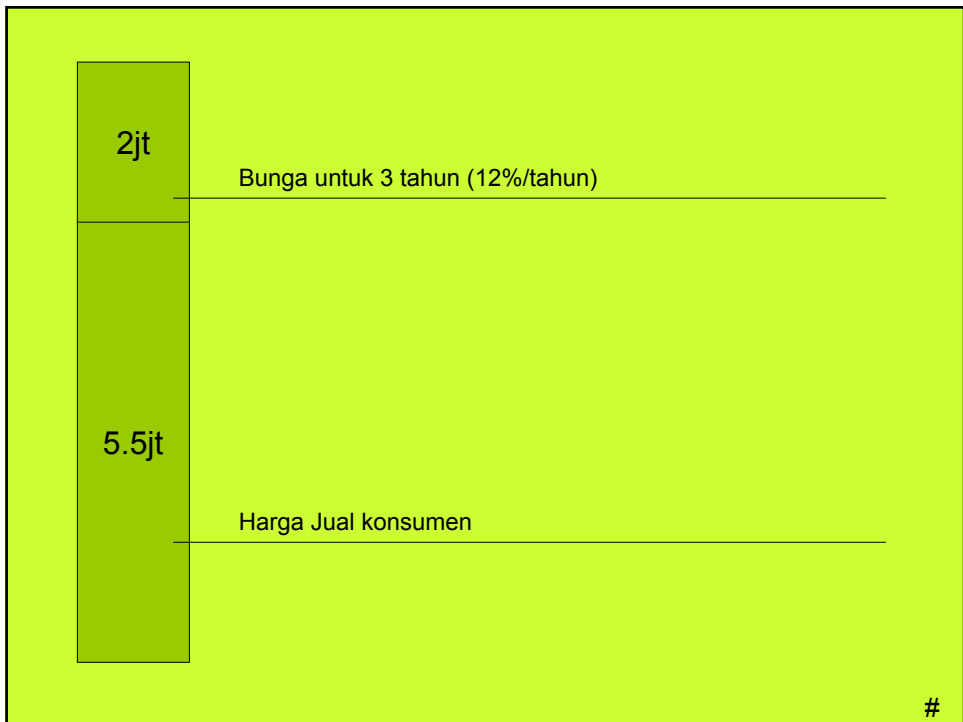
50KK 150KK 250KK 350KK 450KK



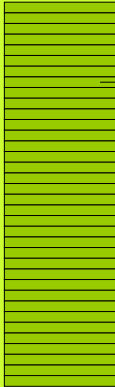
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36 cicilan x Rp 132.000 / bulan

- Apakah Harga ini menarik untuk orang terkaya di desa?
- Sekarang Biaya dia Rp 100.000/bulan
- PLTS tetap 32.000 lebih mahal
- Bagaimana kalau ditambah dengan subsidi bunga?
- Misalnya 6%/tahun

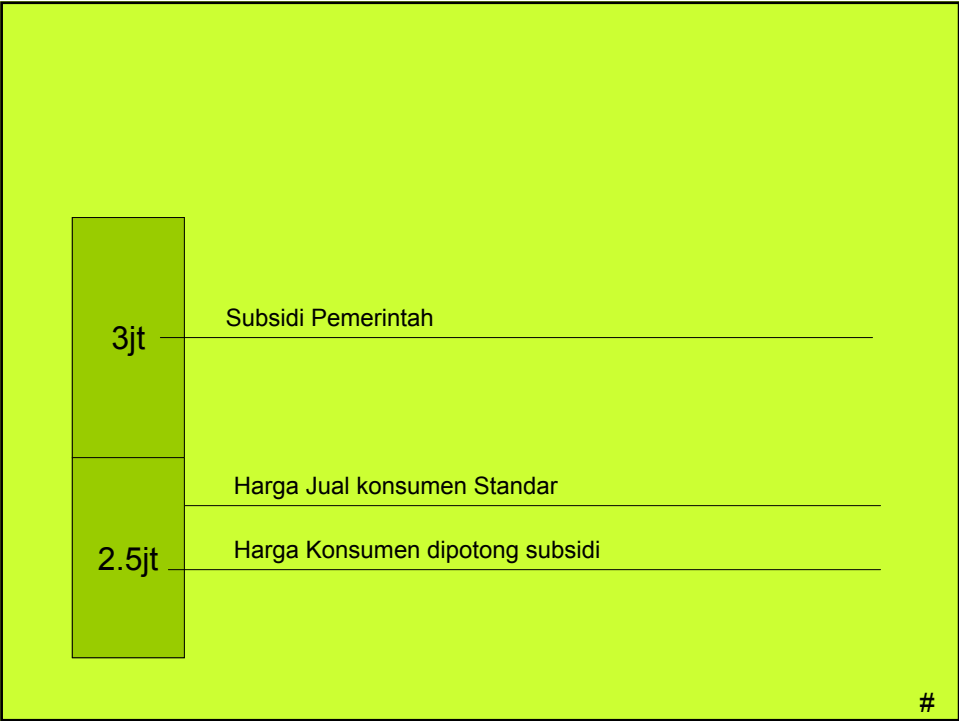
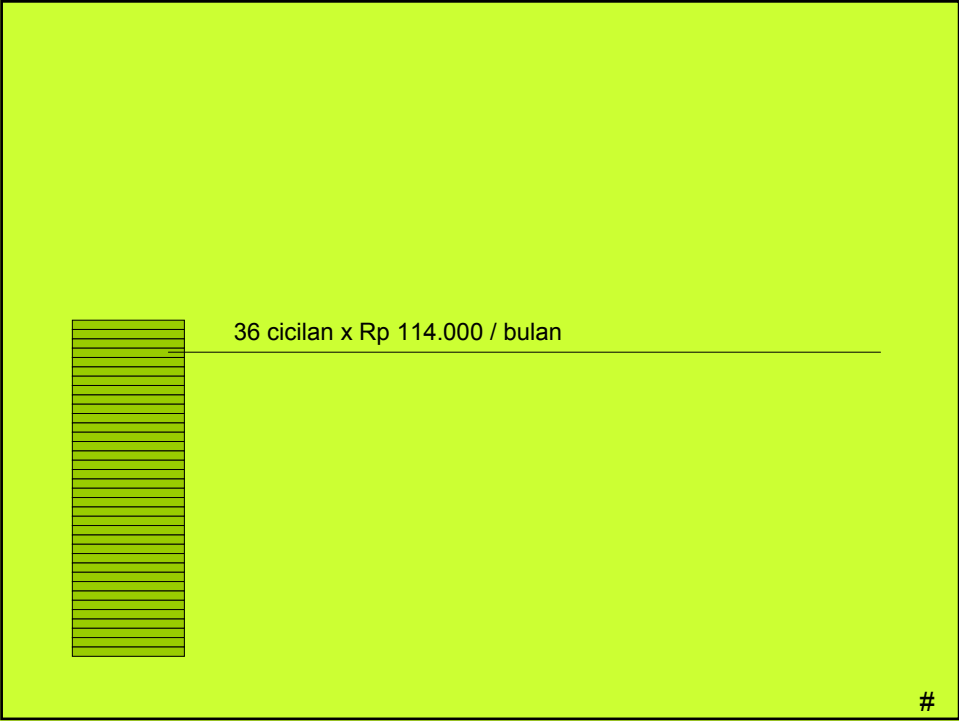
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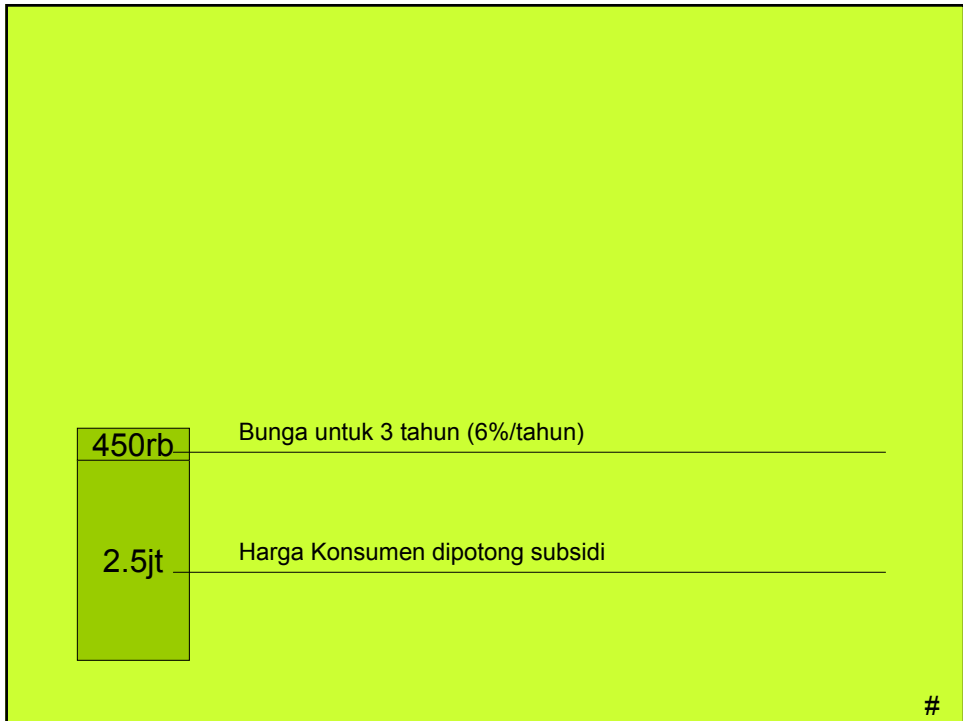


Bunga untuk 3 tahun (6%/tahun)

Harga Konsumen dipotong subsidi

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- Dengan harga ini Produk PLTS akan laku keras di desa desa
- Pemerintah akan menghemat Rp400.000 per setiap unit PLTS terpasang
- Maka Subsidi Rp3jt akan kembali dalam waktu 7 1/2 bulan
- Dan selama umur hidup PLTS yg 20 tahun lebih akan menghemat terus.....



36 cicilan x Rp 82.000 / bulan

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Subsidi BBM



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Subsidi BBM

Keuntungan model usaha S³C:

- 1) Menjual produk yg akan menghemat subsidi BBM melalui pengurangan pemakaian Minyak Tanah yang dapat mencapai 100ltr/bulan/ KK (penghematan subsidi sebesar Rp400rb/KK/bulan)
- 2) Membangun Entrepreneurship di daerah terpencil (+/- 1.000 pengusaha kecil menengah bisa mendapatkan kesempatan membuka usaha sendiri dengan jaminan manajemen berkualitas)
- 3) Membuka lapangan kerja di daerah terpencil untuk 10 - 20 orang per S³C (menjadi 10.000-20.000 orang secara national)
- 4) Meningkatkan kualitas hidup masyarakat daerah terpencil dengan energi terbarukan dan ramah lingkungan.

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