

Scale-Up and Commercialisation of Improved Cookstoves in Sri Lanka: Lessons Learnt from the Anagi Experience



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Cover Images: Main picture: Anagi Stoves in storage (Practical Action/Steven Hunt)
 Inset top: Anagi stove sales on the Kalutara Road (Practical Action/Zul Mukhida)
 Inset bottom: Potters producing the Anagi Stoves (Practical Action/Steven Hunt)

Contents

Background	3
Evolution of the ICS Program	4
Design and Testing 1972-1983	4
Promotion and Dissemination 1985-1990	4
Commercialisation 1987-1996	5
Diversification and reaching the poor 1996-2005	8
The Kumbukgete Village Story	9
Subsidy to Commercialisation: Lessons Learnt	10
Conclusions	12

The commercialisation of Improved Cook Stoves (ICS) in Sri Lanka and specifically that of the widely used Anagi stove, was the outcome of a series of projects over three decades roughly separated into four phases: Design and Testing (1972-1983), Promotion and Dissemination (1985-1990), Commercialisation (1987-1996) and Diversification and reaching the poor (1996-2005). These were led by a series of governmental and non-governmental organizations each motivated by different but ultimately complementary objectives. Today there is sustained capacity for the annual production of 300,000 stoves nationwide and over 3 million stoves in use. There is much to learn from the commercialisation of Anagi stoves including the importance of programme continuity through different phases of the sector, combining international experience with local ownership, involvement of both GOs and NGOs in development phases transitioning to a private-sector final delivery model, user-responsive product design, and responding to the challenges of targeting both the formal and informal sectors.

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Background

Despite Sri Lanka being a middle-income country, biomass currently makes up 57.5% of its energy supply; 93% of this biomass is used for cooking. Improving existing cook stove technologies therefore, can lead to significant economic, environmental and health benefits.

Interest in cook stove improvement in Sri Lanka started in the early 1950s. These activities were initiated among the migrant South Indian community that worked in the tea plantations concentrated in the central part of the country, who had been influenced by the interest generated in South India. However, these were not replicated in other parts of the country, possibly due to the abundance of fuel-wood in those areas and also due to a lack of wider interest and awareness of the significance of Improved Cook Stoves (ICS).

The ICS Program in Sri Lanka was revived in a more formal way in the early 1970s. This was not a single initiative but a series of distinct projects initiated by different governmental and non-governmental organizations, motivated by different objectives. These projects were instrumental in providing continuous progress towards ICS commercialisation. Although design development, promotion and dissemination took place throughout the program, development can be broadly divided into four phases:

- i. Design and testing 1972 -1983
- ii. Promotion & dissemination 1985-1990
- iii. Commercialisation 1987-1996
- iv. Diversification and reaching the poor 1996-2005

From this process the Anagi 2 stove ultimately emerged as the most popular ICS design. Anagi 2 is a one-piece two-pot clay stove which, a study in 3 provinces has shown, is currently used in 30% of urban and 23% of rural households across the country (Amarasekara, 2004).

This working paper looks at the initiatives which took place at each phase, how they led to the development of Anagi 2 as a suitable commercial product and the extent to which their approach was successful in meeting program objectives. Thus it highlights the lessons which can be learnt from the Anagi story on successful scale-up and commercialisation of household bioenergy technologies.



Evolution of the ICS Program

A. Design and Testing 1972-1983

The first attempts to design an improved cook stove were made by the government's leading research institutions. CISIR in 1972, IDB in 1978 and at a later stage the NERD Centre, produced three different single-pot stove designs which achieved their objective of improving stove efficiency.



However, it was not until 1979, when a local NGO, Sarvodaya, initiated an ICS Design and Development Project for rural households in collaboration with ITDG, that a stove was designed with social acceptability as an additional primary objective. This produced the first stove design suitable for dissemination. The Sarvodaya two piece two-pot stove with pottery liner was the outcome of a collaboration which successfully combined Sarvodaya's local channels, knowledge and staff, with ITDG's technical expertise and international experience to ensure community participation throughout the stove design and evaluation process. The project was funded by ODA and supported by Novid (Holland), Helvetas (Switzerland), Vita and ATI (USA), Dian Desa (Indonesia) and Gandhiniketan Ashram (India). Although there was some small scale dissemination of the Sarvodaya two-pot stove following its design, this ceased by the end of the project in 1983 due to lack of resources to finance an extension.

B. Promotion and Dissemination 1985-1990

National Fuel-wood Conservation Project '84 - '90

The 'National Fuel-wood Conservation Project', initiated in 1984 by the state organisation CEB, was instrumental in taking up Sarvodaya and ITDG's efforts to disseminate the Sarvodaya stove. With the objectives of promoting energy conservation and reducing deforestation through reduced fuel-wood use in rural areas, CEB chose the Sarvodaya stove over the CISIR and IDB stoves for dissemination on account of its proven socially acceptable design. The project was mainly funded by the Ministry of Power and Energy and DGIS (Netherlands Directorate-General of Development operation) of the Dutch Government, targeting cities and towns in 12 districts in Central and Southern Sri Lanka.



The approach of the NFCP was to utilise the government's district office officials to build the capacity of rural potters to produce the Sarvodaya stoves and of stove installers to install them. The stoves would then be purchased by the project officials who were in charge of stove promotion and delivered to the users free of charge. Project officials would receive commission on the number of stoves installed in their area.

The project succeeded in training 200 potters and 2,000 stove installers, and in installing 300,000 out of a target of 500,000 stoves. However, despite successful dissemination during the project, the dissemination model was unsuccessful in creating long term, self sustaining markets; such that once CEB (Ceylon Electricity Board) pulled out in 1990 due to a shift in priorities, production ceased and existing users could not maintain or replace their Sarvodaya stoves. This was partly due to potters and stove installers relying on project officials to buy their products and services instead of engaging directly with the users. Once these officials pulled out and subsidies were withdrawn, the created markets collapsed.

However, the project was successful in raising awareness of stoves and their importance beyond fuel wood conservation, towards livelihood creation and the reduction of indoor air pollution; and proved that large scale ICS dissemination was possible. The lessons learnt highlighted the need for the adoption of a commercial strategy to activate market forces, and the importance of a stove design suited to the target market. This laid the foundations for the Urban Stoves Project.

C. Commercialisation 1987-1996

i. Urban Stove Project '87 - '89

In 1987, the ongoing large scale dissemination of Sarvodaya stoves by CEB through the NFCP (National Fuel-wood Conservation Project), and the successful commercialisation of the "JIKO" stove in Kenya by ITDG (now Practical Action), inspired the latter to propose a similar approach for commercialisation of improved cook stoves in the urban areas of Sri Lanka. The so-called Urban Stoves Project (USP) was thus initiated by ITDG in collaboration with CEB with financial support from the ODA (Overseas Development Administration), CEB and the Ministry of Power and Energy. The objectives of the USP were more diverse compared to the NFCP and included reduced rate of deforestation, reduced fuel expenditure, reduced indoor pollution and increased employment opportunities hence an overall increase in quality of life. Two crucial aspects contributed to the success of the project: appropriate design and appropriate commercialisation strategy.

Appropriate design

CEB and ITDG recognized that the Sarvodaya stove design, so readily accepted by rural communities, would not be suitable for urban households. The rural stove was heavy, consisted of two parts and required installation by a skilled installer. It was suited to the need of rural households for slow cooking by being installed within a mud insulating layer which, due to its thermal mass, would absorb the heat and release it slowly. As a two-pot stove, it allowed food to be cooked in one pot directly above the fire while a different food could simmer on the slightly cooler second pot, a very appropriate feature for the local cuisine.

For an urban market however, there was a need for a marketable, off the shelf, easy to transport product, which would be ready for use straight after purchase. This led to the development of the Anagi 2 stove. This was the transformation of the two piece two-pot Sarvodaya stove into a lightweight, one piece two-pot stove. Thus the product could be easily transported home by the user, could be used directly without the need for installation and,



if preferred, could be insulated with a mud layer for slower cooking (though research showed that urban users preferred fast cooking). The stove does not require extensive fuel wood processing and can run on medium-size hard or soft wood and other loose biomass residues, such as coconut shells, fronds and leaves, which can be easily collected from home gardens or purchased commercially. It is estimated that if the Anagi stove is used without insulation, its life-time may be about 1 year; and if insulated, 3 years or more.

Field trials in Colombo of the three one-pot stove designs of CISIR, NERD and IDB led to the selection of the CISIR stove, named Anagi 1, to be promoted as a one-pot alternative to Anagi 2. Although Anagi 1 and 2 were promoted equally, demand for the former was low, despite having a higher efficiency than the former, such that production soon became focused on Anagi 2. It is thought that Anagi 1 was not popular because it was made of three different pieces and also had to compete with the low cost, light weight traditional one-pot stove called U-Chulah already available in the market (Amarasekara, 2004). Anagi 2 on the other hand presented the novel idea of 2 pots which gave the perception of saving fuel-wood and time.

Appropriate commercialisation strategy

By being a lightweight, off the shelf product, the Anagi 2 stove could be sold like any other pottery item on the market. Thus the USP was able to use existing, well-established channels selling similar products to introduce the new stove design. Anagi stoves were promoted via the formal sector by being manufactured in existing tile factories and marketed through private sector dealers. This was also preferred due to time limitations of the project.



Through the project, the organisations aimed to provide technical expertise in stove design and dissemination. Specifically, they provided support in 4 key areas: production, marketing & promotion, training & quality control, and monitoring. Production involved the determination of market size, potential job opportunities and deciding on the most suitable manufacturing route to follow. Marketing and promotion involved the creation of awareness, credibility, product demand and producer buy-in for the Anagi stoves through establishing a brand identity, a price control mechanism, a guarantee scheme and a distribution system. Every Anagi stove produced was embossed with the Anagi stamp. Promotion made use of mass media, outdoor promotional activities and user, producer or partner focused activities.

Quality control activities revealed that tile factories which had not received manufacturing training were producing and selling cheaper unauthorized look-alikes of the product. These were initially labeled 'pirate producers' and were not welcome in the industry due to their poor production standards. Recognising however, their creativity and contribution to increasing awareness and demand for ICS, these manufacturers eventually received proper training, were re-named Look Alike Stove (LAS) producers and were encouraged to strive for better standards. Finally, the project was continually monitored to evaluate the quality of production, effectiveness of marketing and promotion, stove performance and consumer acceptance.

Evaluations showed that the USP was more successful in commercialisation than the NFPC mainly due to the suitability of the dissemination model which involved large scale production by tile factories and independent distribution by private sector dealers at market prices which did not include a government subsidy. As the urban users realised the benefits of the Anagi stoves and these were made increasingly available in the market, demand for them also increased. Success however, was really due to the momentum created by the project which later gradually disappeared as the project phased out.

This is attributed to several factors including the absence of a mechanism for monitoring of activities post project completion and a decrease in production despite high demand. The latter was due to a conflict of interests between formal sector producers (tile factories) and informal sector producers (individual potters and potters employed by the factories) which made collaboration difficult. By nature traditional potters need their independence. Tile factories have a lucrative business in selling tiles – stove production bringing only a marginal return in comparison and thus had little incentive to solve the production problem post project. Nonetheless, by the end of the USP in 1989, infrastructure for producing and marketing 50,000 stoves annually had been established.

ii. Rural Stoves Marketing Project '91 – '96

The success of the USP in commercialisation of the Anagi 2 stove in urban areas by 1989 stimulated a renewed interest in ICS commercialisation in rural areas following the failure of the NFPC which was phasing out around the same time. CEB however, had run out of both funding and interest in continuing the improved cook stove programme, wishing to focus instead on its main remit of electricity generation and distribution.

There was therefore a need for an organization with the willingness and capacity to continue the momentum created. This organization was created by the Project Manager of CEB's National Stove Program and was named the Integrated Development Organisation (IDEA), with the mission to extend the success of the USP and promote Anagi 2 in rural areas.

IDEA, supported by ITDG, was successful in securing funding for a 2-phase 4 year project called the 'Rural Stoves Marketing Project' which started in 1991 and was successfully completed in 1996. The objectives of the RSMP were more holistic, looking to establish a fully commercial and sustainable stove production system to contribute towards overall improvement of quality of life for both producers and users in 12 target districts.

The RSMP, unlike the USP, targeted the informal sector, a larger number of potters, unskilled persons and low income users. Thus there was the challenge of trying to meet both commercial and social objectives. The initial target areas were identified as those of high need (deficit of firewood) and low financial resource potential.

Learning from the successes of the USP commercialisation model, IDEA provided technical training for potters and stove installers while at the same time trying to create awareness and develop market channels at a national level. Mass media, public displays, television, radio and school competitions are examples of some of the promotion channels utilized.



The RSMP was conducted in 2 phases, between which project objectives were re-formulated to encompass gender-equality in job opportunities and inclusion of the poorest households. The latter was achieved through involvement of CBOs (Community Based Organisations) which had existing links to the poorest households, incorporating Anagi stove promotion and training in their ongoing activities. The CBOs were provided with facilities to establish a revolving fund to facilitate purchasing of stoves on credit, to be paid back in instalments.

D. Diversification and reaching the poor 1996-2005

Asia Regional Cook stove Project '96

Although by the end of the RSMP Anagi 2 stoves were readily available in the market, it was observed that commercial channels were still largely restricted to urban and semi urban areas, excluding many poor in remote areas. Therefore in 1996, IDEA with the support of the Asia Region Cookstove Project (ARECOP) initiated a project to address the issue and in 2000 also secured support from UNDP.



The objectives of the project were to establish and empower a network of decentralized stove dissemination activities, to diversify these activities to cover wider cooking needs and rural industries, and to decentralise technical expertise and responsibility at a district level. With this exercise it was able to spread the benefits of commercialisation and scale up the technology further to cover a wider group and area.

Currently, Anagi stoves are manufactured by approximately 185 trained potters spread over 14 districts of Sri Lanka (in the Central, North Central, North Western, Southern, Sabaragamuwa and Uva provinces) and it is estimated that over three million stoves have been commercially produced and marketed since 1991. Most of these potters have been trained by IDEA. Today around 300,000 stoves are produced annually and sold for around US\$1.5 – 3 a piece.

It is estimated that one skilled potter and three assistants together can produce 1,000 stoves per month. The potter however, has to be skilled in traditional pottery before being trained to produce Anagi stoves. Each stove consists of three main components: the fire box, the second pot hole and the tunnel which connects the two. It is very important that all three components are properly made, aligned and assembled as instructed.

This highlights the requirement for specialised training to make sure that specified shapes and dimensions are strictly adhered to. Improperly made Anagi stoves can be worse than an open fire hearth by releasing more particulate matter from incomplete combustion directly into the user's face. Following proper construction guidelines also keeps breakages to a minimum and reduces manufacturing costs. ITDG and IDEA developed and disseminated a training manual which provides step by step instructions and a list of the tools, moulds and templates required. In many cases however, even potters who initially use moulds, abandon them once they become accustomed to the design.

The Kumbukgete Village Story

Five villages in Sri Lanka: Ambagaswewa, Lungamuwa, Katupotha, Kumbukgete and Krimetiya have taken up manufacturing of stoves at scale, as a village-wide means of livelihood. The village of Kumbukgete, situated in the North Western province of Sri Lanka, is currently producing 50% of the total production of ICS in the country. It is speculated that this is partly due to a lack of skilled potters within younger generations in other regions due to a social stigma surrounding the profession.



It all started under the NFCP with the training of one family in the Kumbukgete village to produce the Sarvodaya stove. In 1991 IDEA trained a further five families in the manufacture of Anagi stoves, who then began producing 500 stoves a month. By the end of the RSMP in 1996, the production had increased to 1,500 with ten families involved in production. In 1996, further support from IDEA and ARECOP led to a gradual increase in monthly production of the village to 15,000 stoves. This was possible because the village consisted of many traditional potters who had already established channels for accessing raw materials and manufacturing equipment. Support was provided to them in the form of training in manufacturing of Anagi stoves and in helping them develop market chains.

The village currently employs people from neighbouring villages as unskilled labourers. Women are engaged in assembling of components to produce completed stoves whereas men are generally involved in preparation of the clay, transportation of materials and products and manufacturing of the individual stove components.

Subsidy to Commercialisation

Lessons Learnt

In Sri Lanka, the ICS market is now fully commercialized; hence there are well established market chains to support it. Usually distributors visit production centres to buy the stoves in bulk and producers have guarantee of regular buyers and income. Purchased stoves are distributed to retail shops spread throughout the country, sometimes covering distances of over 200 km. Small producers living in isolated areas sell their products within their village or in nearby towns.

Several studies have identified that the following factors played a major role in the commercialisation process and maintaining the interest of manufacturers as well as buyers:

1. **Flexibility of strategies:** The success of the Urban Stoves Project is partly attributed to the application of modern marketing strategies while accommodating for a variety of socio-economic, cultural, equity factors and aspirations of a traditional society. The early discouragement of 'pirate producers' and their later encouragement to continue as Look Alike stove producers is an example of flexibility in strategy considering emerging opportunities or pressures and incorporating lessons learnt.
2. **Program continuity:** Despite the involvement of different organisations led by different objectives and strategies, each phase of development picked up from where the previous one left off- without much duplication of effort. Taking on board the lessons learnt thus ensured program continuity. The broadening of project objectives encouraged this process by ensuring project relevance to the development agendas of the different actors involved.
3. **Exposure to international experience and networks:** Through collaboration with international organisations such as ITDG and ARECOP, the program benefited from funding and the international experience of its partners on successful commercialisation of products. ITDG's flexibility and overseeing role enabled it to continue to support program development even as local program ownership shifted from CEB to IDEA.
4. **Involvement of both governmental and non-governmental organisations:** The first attempt at ICS dissemination was initiated by the government organization CEB. Although continued dissemination post-project failed, the project's wide reach through the utilization of district offices and a subsidization scheme raised crucial awareness of the ICS movement to donors, the private sector and users, which was instrumental for later initiatives. It also increased awareness of the importance of ICS in fuel economy and reduced indoor pollution, broadening the objectives of later initiatives.
5. **Appropriate product design:** The success of the USP is also largely attributed to the development of the Anagi 2 stove the design of which was based on market research so that it suited urban users in terms of transportability, installation and use. The flexibility in its design made it suitable both for urban and rural users. Unsuccessful attempts at dissemination of Anagi 1 and of the IDB and NERD stove designs demonstrate that technological performance alone is not sufficient to guarantee product success.
6. **Low income users should not generally be the primary target of a commercialisation scheme:** The USP's weakness lay in its inability to reach the poorer, rural communities. Nonetheless, large scale commercialisation of the Anagi 2 stove ensured a constant supply of the product through the main marketing channels, making it a product that poor communities could aspire to obtain. Strategies to reach the poor were developed alongside the commercial network through CBO empowerment to provide credit, establish revolving funds and introduce stoves as an entry point to other health and social concerns.
7. **Challenges of targeting both the formal and informal sector:** In the context of equity, introducing modern production techniques which could potentially replace traditional pottery skills was found to be in conflict with program objectives (although some mechanisation did prove beneficial). Having different strategies for approaching the informal and formal sectors was also necessary rather than trying to merge the two, since the former relied heavily on stove production as a source of income, whereas tile factories for example, with a more diverse production portfolio did not. Also, the potters employed for production by the tile factories did not like to work within a rigid factory environment. This was overcome by making potters production partners instead of employees. This was achieved by delivering the prepared clay to the villages thus allowing potters to work within their own village environment and then buying the unfired stove to be fired in the factory kiln.
8. **Emergence of large scale producers:** Despite efforts to increase decentralised production in rural areas, training a large number of rural potters did not result in a significant increase in production. Efforts were therefore made to support the emergence of larger scale production in villages such as Kumbukgete by training clusters of potters. Kumbukgete had many advantages over small producers such as low cost of raw materials, linkages with a large number of wholesale dealers, a regular market, economies of scale, potters skilled in stove production and the confidence built on the success of the stove business. This did however discourage individual rural stove producers from increasing their business beyond the local market since they could not compete with Kumbukgete's rate and low cost of production.



Increased involvement and final ownership of the stove program by the NGO sector however, ensured continued interest and effort in promoting ICS even after government priorities changed. Furthermore, with primary objectives of equity, poverty alleviation and sustainable development, ITDG, IDEA and ARECOP contributed to the creation of inclusive markets which extended to remote rural communities. Finally, by creating IDEA, CEB ensured that, in the absence of a national policy to fulfill the role, a local organization with the leadership status, expertise and commitment to long term stove development would remain to lead all subsequent initiatives.

Conclusions



Current production of Anagi 2 stoves has stabilised at 300,000 per year. It is speculated that this is due to lack of skilled potters within younger generations due to a social stigma surrounding the profession. The exception is the successful pottery village, Kumbukgete, where the economic benefits of ICS production motivate them to continue the tradition and maintain their competitive advantage. Despite efforts for decentralised production, 83.3% of production is concentrated in the 5 villages of Ambagaswewa, Lungamuwa, Katupotha, Kumbukgete and Krimetiyana and is produced by 120 skilled potters.

Although there is no country-wide data to assess penetration levels of the stove, the studies carried out as parts of the projects mentioned above reveal that usage of Anagi stoves has certainly helped people, especially women, to cook in a healthier environment and hence have a better quality of life. Recently, an increase had been observed in the number of urban households using Anagi due to the increased cost of liquefied petroleum gas.

Nonetheless, a reduction in production might be observed in the future due to a reduction in fuel-wood availability (or the need to pay for it) and of access to clay resources, both of which directly affect product manufacturing costs. The Central Environment Authority of Sri Lanka has already imposed legislation limiting clay mining in certain areas of the country and it is envisaged that in future this will be extended to cover a larger area.

The experience of the ICS Program in Sri Lanka has been shared with the international community at several international forums and workshops. In seeking models for successful product commercialisation, it would be useful to study the effect that learning outcomes from the Anagi story have had on similar projects around the world and whether these have been successful.

In a 'Purchaser's Survey of Anagi Wood Burning Stoves' carried out in 1989, respondents identified that Anagi consumes less fuel wood, is safer to use, helps keep the kitchen clean, cooks faster, emits less smoke and produces less soot than the traditional three stone hearth. Furthermore, according to a study carried out by the University of Surrey, the Anagi Stove showed the potential to reduce CO₂ emissions from 610kg/capita (2003) (International Atomic Energy Agency, 2005) to within a range of 111-266 kg/capita/year (Begg et al, 2003).

With time, objectives behind improved cook stove projects in Sri Lanka shifted away from reducing deforestation towards placing users on a higher step on the energy ladder and providing a clean and safe kitchen environment. However, further studies are necessary to determine the extent to which the Anagi stove has contributed to healthy kitchens in the different regions of Sri Lanka. With the increasing threat of climate change, quantifying ICS contribution to reducing indoor air pollution and CO₂ emissions could potentially increase finance flows to the market.

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Glossary

ARECOP:	Asia Regional Cookstove Program
CBO:	Community Based Organisation
CEB:	Ceylon Electricity Board
CISIR:	Ceylon Institute of Science and Industrial Research
DGIS:	Netherlands Directorate-General of Development Cooperation
ICS:	Improved Cook Stoves
IDB:	Industrial Development Board
IDEA:	Integrated Development Association
ITDG:	Intermediate Technology Development Group (now called Practical Action)
JIKO:	The Kenyan Ceramic Jiko (KCJ) is a light, portable charcoal burning stove consisting of 2 distinct units - a metal cladding and a ceramic liner
MPE:	Ministry of Power and Energy
NERD:	National Engineering Research and Development Centre
NFCP:	National Fuel-wood Conservation Project
NORAD:	Norwegian Aid Agency for Development Cooperation
ODA:	Overseas Development Administration
RSMP:	Rural Stoves Marketing Project
USP:	Urban Stove Project

Appendix

The table below shows the timeline of introduction of stove models by various institutions.

Year	Stove models	Designed by
1952	Herl Chula mud/chimney	Social Workers
1972	Two piece one-pot brick and cement	Industrial Development Board (IDB)
1978	Two piece one- pot pottery with chimney	Ceylon Industrial & Scientific Research Institute (CISIR)
1978 - 1983	Lorena, Dian Desa/chimney/ chimneyless 2 pot mud stoves, Sarvodaya 2 piece pottery liner	Sarvodaya/ITDG
1983	Single pot/clay/grate stove	CISIR
1986	Anagi two pot clay stove	CEB/ITDG
1987	Large Institutional Stoves/brick/ iron grate/chimney	CEB/Hoffmann Consultants
2001	Mud Stoves with grate for Domestic/Cottage industries	ARECOP/IDEA

Source: Historical Timeline from Subsidy to Commercialisation of Improved Cook stoves: The Path Leading to Sustainable Stove Development and Commercialisation Activities in Sri Lanka, R.M.Amarasekara and Karunatisa Atukorala, Integrated Development Association (IDEA)

The table below shows important actors and Donor Agencies in the ICS commercialisation efforts:

Period	Implementing Organisations	Donor Agencies
1972	CISIR, IDB	Ministry of Industries
1979-1983	Sarvodaya, ITDG	ODA
1983	CEB,NERD	Ministry of Housing
1984- 1990	CEB	Ministry of Power & Energy (MPE), Ministry of Environment, Ministry of Plantation, Ministry of Public Administration, DGIS (Dutch), NORAD, SIDA
1987	CEB, ITDG	MPE, ODA
1991 –1996	IDEA, ITDG	ODA, ITDG, NORAD
1996 – 2002	IDEA	ARECOP

The table below shows how objectives of the Improved Cook Stoves Program have evolved over time and the extent to which these have been met:

Year	Objectives	Objectives met?
1970s	a) To develop stoves with high efficiency -CISIR, IDB	Confirmed through lab and field tests prior to dissemination
1984	a) To minimise deforestation b) To develop a subsidization scheme within the village infrastructure for stove dissemination - NFCP (CEB)	a) Unrealistic as firewood consumption is not the main source of deforestation [8] b) No evaluation carried out
1987	a) To reduce domestic firewood consumption, rate of deforestation and domestic energy expenditure b) To generate employment opportunities, cleaner kitchens and availability of hot meals and hot water – USP (CEB/ITDG)	a) No evaluation carried out b) see below
1991	a) To create additional income opportunities for potter families b) To improve household conditions, greater cooking convenience, time savings of women c) To influence policy makers, others interested in health, household energy and other development issues with the lessons learned d) To extend the benefits of ICS to rural areas e) To establish fully commercial and sustainable production - RSMP (IDEA/ITDG)	a) Yes e.g. 185 potters involved in production b) No evaluation carried out c) No evaluation carried out d) & e) Production and marketing continues till this day in both urban and rural areas
2002	a) To create networks of NGOs interested in stove related activities, decentralising stove activities and transferring technology to CBOs (IDEA/ARECOP)	Yes – today a network of CBOs continues stove activities independently with donor funds

Executive summary

The commercialisation of Improved Cook Stoves (ICS) in Sri Lanka and specifically that of the widely used Anagi stove, was the outcome of a series of projects over three decades roughly separated into four phases: Design and Testing (1972-1983), Promotion and Dissemination (1985-1990), Commercialisation (1987-1996) and Diversification and reaching the poor (1996-2005). These were led by a series of governmental and non-governmental organizations each motivated by different but ultimately complementary objectives. Today there is sustained capacity for the annual production of 300,000 stoves nationwide and over 3 million stoves in use. There is much to learn from the commercialisation of Anagi stoves including the importance of programme continuity through different phases of the sector, combining international experience with local ownership, involvement of both GOs and NGOs in development phases transitioning to a private-sector final delivery model, user-responsive product design, and responding to the challenges of targeting both the formal and informal sectors.

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Policy Innovation Systems for Clean Energy Security (PISCES) is a five-year initiative funded by the UK's Department for International Development (DfID). PISCES is working in partnership with Kenya, India, Sri Lanka and Tanzania to provide policy makers with new information and approaches that can be applied to unlock the potential of bioenergy to improve energy access and livelihoods in poor communities. The project is being carried out by Practical Action Consulting UK (PAC UK), the University of Edinburgh, PAC Eastern Africa, the African Centre for Technology Studies, M.S. Swaminathan Research Foundation in India, PAC South Asia in Sri Lanka and the University of Dar Es Salam in Tanzania.

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