

SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)



**SAARC ENERGY CENTRE
ISLAMABAD**

REPORT

Special Project
(PRG-89/2015/PROMO)

**Promotion of SAARC Chullahs (Improved Cooking Stoves- ICS) for their
Commercialization / Marketing / Scaling up in the SAARC Member States**

October 2015

SAARC Energy Centre
697, Street 43, Sector E-11/4, NPF,
Islamabad, Pakistan
www.saarcenergy.org



Promotion of SAARC Chullahs (Improved Cooking Stoves-ICS) for their Commercialization / Marketing / Scaling up in the SAARC Member States

Lahore, Pakistan, 30 September - 01 October 2015

Background

1. The World Health Organization (WHO) released its 2012 estimates of the global burden of disease from Air Pollution and reports that globally, 4.3 million deaths were attributable to Household Air Pollution (HAP) in 2012, almost all in low and middle income (LMI) countries. The findings also estimate that the joint effects of HAP and ambient Air Pollution were attributable to over 7 million deaths in 2012, representing one in eight of total global deaths and confirming that Air Pollution is now the world's largest single environmental health risk. The new estimates make it clear that reducing air pollution could save millions of lives and further underscore the need for Clean Cooking Technologies for around 3 billion people who continue to live in homes using solid fuels for cooking and heating.
2. SAARC countries which have a population of 1.6 billion and majority of them living in the rural areas do not have access to modern means of energy and are dependent on use of biomass as main source of energy. Main applications are in the domestic sector and small-scale industries, but are also increasingly consumed in modern systems for combined heat and power generation.
3. Biomass does not combust cleanly in the traditional stoves and resulting smoke increases risk of diseases in both children and adults, e.g. Acute respiratory infection, T.B, Asthma, Low birth weight, Cataract and Cancer etc. Thus, Improved Cooking Stoves (ICS) are seen as a tool in combating Indoor Air Pollution which may help in improving public health particularly of rural women and children. The time and money saved in collection of cooking fuel can not only help in uplifting rural economy but may gain environmental benefits such as preventing deforestation and reduction in Greenhouse Gas (GHG) emissions.
4. Currently, Biomass fuel that includes wood, crop residues, leaves and animal dung is being burnt in traditional cooking stoves called Chullahs in rural areas of all Member States of SAARC Region. The Biomass has been inefficiently used in these countries as these are not burnt completely which results in wastage of energy resource and increased emissions of GHGs. The increase rate of population coupled with higher prices of commercial fuels puts further burden on the traditional sources of biomass. All Member States in the SAARC region are trying to reduce dependence on the biomass fuels but it is expected that it may continue to be main source of cooking fuel in this region for years ahead.

Improved Cooking Stoves (ICS) Programme by SEC

5. SAARC Energy Centre (SEC) had conducted an in-house study on Improved Cooking Stoves (ICS) in South Asia in 2010 with an aim to cover the necessity of ICS in view of biomass dependence in the SAARC region and impact of cooking with traditional stoves. Subsequently, the programme to develop, design and manufacture Improved Cooking Stoves (ICS) was initiated by SEC and it was successfully completed in 2012.
6. The developed SAARC ICS by SEC were energy efficient, low cost and environmentally friendly. Three (3) different designs of ICS were developed by SEC for different climatic regions of SAARC Member States. These ICS were deployed in the field for trials in 2013 in different climatic regions of Pakistan simulating different climatic regions of SAARC Member States. The objectives of field trials of ICS(s) were to verify their performance in the rural areas against the results achieved in the laboratory, acceptability of technology and getting feedback from the users for further improvement.
7. The Field trials of ICS(s) were conducted through Community Organizations who deployed and tested ICS(s) in sixty two (62) households for their feedback in the different climatic conditions of Pakistan simulating different climatic conditions of SAARC Region.
8. The results of the field trials revealed that the households were using inefficient fixed three stone/ brick traditional stoves and ICS(s) developed by SEC helped in reduction in smoke, cooking time and considerable biomass savings.

Types of ICS Models

9. All the models of ICS(s) developed by SEC are metallic, light weight and portable. The models can be used for cooking as well as space heating, water boiling and can be used for burning all variety of biomass types. ICS(s) are cheaper and commercially viable for end users, and offer additional economic benefits. The following models were developed for various geographical locations with specific climatic conditions:

<u>SAARC-I</u>	<u>SAARC-II</u>	<u>SAARC-III</u>
Round shape, metallic body	Round shape, metallic body, water tank (11 liters)	Round shape, metallic body
Cold areas	Cold areas	Hot areas
Cooking, space heating	Cooking, space heating, water heating	Cooking
No insulation	No insulation	Combustion chamber insulated



SAARC-I



SAARC-II



SAARC-III

Instructions to use ICS(s)

10. The instructions mentioned below may be followed by the users during operation of the ICS(s):

- a) Place chimney on cook stove and adjust it properly.
- b) Place 2-3 small wood pieces in the chamber of cooking stove and ignite them with the help of paper, kerosene oil and using match stick.
- c) Keep adjusting wood pieces to ensure that they are burning properly and use the back hole appropriately for proper combustion by adjusting air flow.
- d) Do not touch the outer body of ICS because it is very hot.
- e) After cooking take out remaining pieces of wood and close air inlet. Remove ash from the stove to clean it.

Benefits of ICS(s)

11. The usage of SAARC ICS(s) may lead to following local/ global environmental benefits:

- a) Improved cooking stoves can decrease indoor smoke levels up to 90%
- b) Carbon monoxide and particulate matter inhalation is minimized, thus reducing respiratory diseases associated with polluted indoor air as well as eye infections
- c) Serious diseases such as pneumonia will be reduced if levels of indoor air pollution are minimized

- d) Improved cooking stoves use up to 50% less biomass than traditional stoves
- e) Where biomass is scarce, efficient cooking practices reduce pressure on forests and other sources for biomass
- f) Clean air in the home benefits the health of new mothers and promotes healthy child brought up
- g) Less exposure to indoor air pollution helps prevent health complications for pregnant women and the developing embryo, including stillbirth and low birth weight
- h) Time and energy spent for collection of biomass is reduced while reducing medical cost and increasing household income capacity.
- i) Children will have more time for study and other extracurricular activities if they spend less time in collecting biomass fuel

Promotion of ICS

12. SEC had organized a two days dissemination event of ICS under its approved programme for FY 2015 i.e., "Promotion of SAARC Chullahs (Improved Cooking Stoves- ICS) for their Commercialization / Marketing in the SAARC Member States" in Avari Hotel, Lahore, Pakistan on 30 September - 01 October 2015. The same dissemination event will be held during upcoming workshops of SEC in FY 2016.

Participation

13. A total of 72 participants including delegates from SAARC Member States such as Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka; and Resource Persons from Canada, China, Netherlands, India, Pakistan and Sri Lanka; and other stakeholders were given briefing of the SAARC ICS(s). List of the participants is available at Annex-I. The participants were disseminated the design of the ICS(s) so that the same may be replicated on commercial scale in other Member States. The participants were given USBs containing the detailed engineering drawings of all types of ICS(s) and brochures. Photographs are available at Annex-II.

Prospects of ICS in SAARC Countries

14. A comprehensive briefing to the participants was given by the SEC focal persons for dissemination and knowledge sharing of SAARC ICS. The engineering drawings of ICS(s) were also provided through distribution of USBs to all delegates from the Member State and/or any other interested stakeholder. The participants from Member States will in-turn interact with the relevant organizations working in Cooking Stoves technology in their respective Member States and get these ICS(s) manufactured through small entrepreneurs following their business models, which will popularize these ICS(s).

SAARC Perspective Workshop on the Past, Present and Future of High Voltage DC (HVDC) Power Transmission

Lahore, Pakistan | 30 September – 01 October 2015

List of Resource Persons, Delegates & SEC Team Members

#	Delegate's Name and Organization	Contact Information
Resource Persons		
1.	Mr. Hassan Jafar Zaidi Chief Executive Officer, Power Planners International, Pakistan - UK	hassan@powerplannersint.com Cell: +92 3014145264
2.	Mr. V. K. Kharbanda Project Director, IRADe, USAID SARI/EI, India	vkharbanda@irade.org Cell: +91 9560004227
3.	Mr. Muhammad Daud Former General Manager, Planning (Power) Consultant, National Transmission and Dispatch Company Limited, Pakistan	daud.02@gmail.com Cell: +92 324469444
4.	Mr. Wang Bo Deputy Project Manager, China Electric Power Equipment & Technology Co., Ltd. China	wangbo@cet.sgcc.com.cn
5.	Mr. Tauqeer Ahmad Project Engineering Manager (Eastern Alberta Transmission Link), Siemens, Canada	tauqeer74@hotmail.com +01 5878927208 +92 3244745809
6.	Mr. Abdul Razzaq Cheema Consultant, National Transmission and Dispatch Company Limited, Pakistan	abd_razzaqcheema@hotmail.com +92 321 9405818

#	Delegate's Name and Organization	Contact Information
7.	Mr. Anjum Ahmad Senior Energy Specialist, The World Bank, Pakistan	aahmad2@worldbank.org Cell: +92 300 8416260
8.	Dr. P. N. Fernando Former Manager, Energy Division, Infrastructure, Energy, Financial Sectors Dept (East), Asian Development Bank	prem99.fernando@gmail.com Cell: +94 778155087 +94 112372760
9.	Mr. Mohisn M. Syed Managing Director Hybrid Tecniqs, Member, Board of Director, NTDCL, Pakistan	mohsinht@yahoo.com Cell: +92 300 8413650
10.	Mr. Muhammad Shafique Chief Engineer, System Protection, National Transmission and Dispatch Company Limited, Pakistan	engrshafiq2007@yahoo.com Tel: +92 42 99202655 Cell: +92 347 4447757
11.	Mr. Rajiv Ratna Panda Senior Project Manager, IRADe, USAID SARI/EI, India	rajivpanda@irade.org Cell: +91 9958126333
12.	Mr. Bas Verhoeven Director Marketing & Sales, KEMA Laboratories, Netherlands	bas.verhoeven@dnvgl.com
13.	Mr. Oomen Chandi Executive Director (HVDC Engg.), PowerGrid, India	ochandy@powergridindia.com
14.	Ms. Quan Bailu Chief Engineer, HVDC Expert, China Electric Power Equipment & Technology Co., Ltd. China	quanbailu@csepi.com

#	Delegate's Name and Organization	Contact Information
15.	Mr. Rehan Akhtar CFO, DGM (Finance) CPPA – NTDC, Pakistan	rihanmca@hotmail.com Cell: +92 347 444 77 05
Delegates from SAARC Member States		
Afghanistan		
16.	Mr. Mohammad Zubair Stanikzai, Manager for Supervision of Energy Projects, Department of Supervision of Energy Projects Implementation, Ministry of Energy and Water, Afghanistan	stanik_zubair@yahoo.com Tel: +93 (0)75 5200 4998 Cell: +93 (0)786 604 610
Bangladesh		
17.	Mr. Md. Shamim Hossain Executive Engineer, Maintenance Division, HVDC Station, Bheramara, Kushtia, PGCB, Bangladesh.	enqr.shamimh@yahoo.com Cell: +88 (0) 1787680501 +88 (0) 1712192930
18.	Mr. Md. Sohel Rana Sub-Divisional Engineer, Operation (Bangladesh- India Power Transmission Centre), Power Grid Company of Bangladesh Limited, Bangladesh.	sohel.pgcb@gmail.com Tel: +880-732664197 Cell: +880-1787680506
Bhutan		
19.	Mr. Gorab Dorji, General Manager, Engineering, Design and Contracts Department, Bhutan Power Corporation, Thimphu, Bhutan.	gorabdorji@bpc.bt

#	Delegate's Name and Organization	Contact Information
20.	Mr. Ugyen Chophel Engineer, Dept. of Hydropower and Power Systems, Ministry of Economic Affairs, Thimphu, Bhutan.	uchophel@moea.gov.bt Tel: +975 02 323618 +975 02 325151 Cell: +975 17377018
India		
21.	Mr. Y K Sehgal, Chief Operating Officer, POWERGRID, India	Tel : +91 124 2571816 Fax: +91 124 2571793 gridtech2013@gmail.com ; gridtech2013@powergrid.in
22.	Mr. Ghanshyam Prasad, Director (OM / Trans / PG), Ministry of Power, India	Tel : +91 99 68 301928
Nepal		
23.	Mr. Tirtha Raj Aryal Deputy Chief of Mission, Nepalese Embassy in Pakistan	taryal@gmail.com Tel: +92 51 2610317 Cell: +92 333 5053801
Pakistan		
24.	Mr. Kamran Shafiq	
25.	Mr. Mohammad Arshad Mirza Chief Engineer, Technical Services Group, NTDC	mirzama786@yahoo.com Tel: +92 42 35821418 Cell: +92 0347 4447733
26.	Mr. Saqib Majeed Addl. Manager (Grids), Technical Services Group, NTDC	Saqibmajeed1@gmail.com Tel: +92 35821418 Cell: +92 0342 1110757

#	Delegate's Name and Organization	Contact Information
27.	Mr. Tariq Shafi Manager (Coordination), Project Management Unit, NTDCCL	Tariqshafi4@gmail.com Tel: +92 42 36300679 Cell: +92 0333 4384319
28.	Mr. Khalid Mehmood Director Environment & Social Impact Cell (ESIC) NTDCL	esic@ntdc.com.pk Tel: +92 42 99202211 (Ext: 2141) Cell: +92 0347 7770224
29.	Mr. Syed Hammad Mashhadi Assistant Manager (PSS), PMU, NTDCCL	Hammad218@yahoo.com Tel: +92 42 36300679 Cell: +92 0300 9477100
30.	Mr. Abdul Rehman General Manager, Services Division, NTDCCL	Arrehman57@gmail.com Tel: +92 42 99204184 Cell: +92 0346 1110243
31.	Mr. Muhammad Jaffar Chief Engineer, Grid System Operation (GSO), NTDCL, Lahore.	Jaffar57@gmail.com Tel: +92 42 99202052 Cell: +92 347 4440060
32.	Mr. Nasir Usman C.E. Design, Design Department, NTDCCL, Lahore.	Osman57@gmail.com Tel: +92 42 99202190 Cell: +92 347 4440213
33.	Mr. Umair Rauf Assistant Manager (Projects) Design Department, NTDCCL, Lahore, Pakistan	Umair.rauf2001@yahoo.com Tel: +92 42 99202211 (Ext: 2154) Cell: +92 321 4412087

#	Delegate's Name and Organization	Contact Information
34.	Ms. Sarah Sharif Deputy Manager (T/L) Design Department, NTDCCL, Lahore, Pakistan	sarahsharifntdc@gmail.com Tel: +92 42 99202211 (Ext: 2147) Cell: +92 300 4304526
35.	Mr. Ahsan Mubashir Assistant Manager Design Department, NTDCCL, Lahore, Pakistan	ahsanmubashir@yahoo.com Tel: +92 42 99202211 (Ext: 2147) Cell: +92 324 4732605
36.	Mr. Liaqat Ali Manager Design, Design Department, NTDCCL, Lahore, Pakistan	Liaqat.ali057@gmail.com Tel: +92 42 99202615 Cell: +92 347 4447722
37.	Mr. Mazhar Ali Manager, Design Department, NTDCCL, Lahore, Pakistan	Eletrcial_NTDC@yahoo.com Tel: +92 42 99202470 Cell: +92 333 4657787
38.	Mr. Muhammad Nawaz Deputy Manager (Design), Design Department, NTDCCL, Lahore, Pakistan	nawaz199@hotmail.com Tel: +92 42 99202282 Cell: +92 321 4512248
39.	Mr. Shahid Shafi Sial	
40.	Mr. Muhammad Abubaker Assistant Manager (EHV), Design Department, NTDCCL, Lahore, Pakistan	smabs@gmail.com Tel: +92 42 99202190 (Ext: 2612) Cell: +92 332 4741460
41.	Mr. Imran Hameed Deputy Manager (System Protection), System Protection Department, NTDCCL, Lahore, Pakistan	imran04747@gmail.com Tel: +92 42 99202211 (Ext: 2130) Cell: +92 331 4804651

#	Delegate's Name and Organization	Contact Information
42.	Mr. Muhammad Kamran Siddiqui Additional Manager (System Protection), System Protection Department, NTDCL, Lahore, Pakistan	mkamran313@yahoo.com Tel: +92 42 99202211 (Ext: 2130) Cell: +92 333 4110476
43.	Mr. Muhammad Shabbir Deputy General Manager (Finance), WPPo - NTDCL	dygmfwppo@gmail.com Cell: 0347 444 7718
44.	Mr. Mubashar Ahmad Quraishi	
45.	Mr. Ahmad Umar Dewan	
46.	Mr. Adeel Zafar	
47.	Mr. Sabir Ali	
48.	Mr. Mazhar Iqbal Ranjha Director (Technical and Standards) NEPRA, Government of Pakistan, Islamabad	Email: miranjha@hotmail.com Cell: 0300 066 4009
49.	Mr. Ameer Haider Ali Team Lead System Studies Engineer Power Planners International, Pakistan	haider@powerplannersint.com +92 300 0881764
50.	Ms. Sana Mujeeb System Studies Engineer Power Planners International, Pakistan	sana@powerplannersint.com +92 300 0881759
51.	Mr. Taqiuddin Deputy Manager, System Protection, NTDCL	engrtaqiuddin@gmail.com +92 333 4372952
52.	Mr. M. Masood Anjum	

#	Delegate's Name and Organization	Contact Information
53.	M. Shahid Nazir Additional Manager, CPPA-NTDCL	shahidpmu@hotmail.com Cell: +92 3334501911
54.	Mr. Ali Raza Quraishi	
55.	Ms. Samreen Fatima Shirazi Senior Engineer System Studies Power Planners International, Pakistan	samreen@powerplannersint.com +92 300 0881755
56.	Mr. M. Umair Bilal Team Lead System Studies Engineer Power Planners International, Pakistan	umair@powerplannersint.com +92 300 0881765
57.	Mr. Ashar Ali Deputy Manager, WPPO-CPPA-NTDCL	ashar056@gmail.com
58.	Mr. Irfan Ahmad	
59.	Ch. Muhammad Arshad Managing Director, NTDCL	md.ntdc@ntdc.com.pk
60.	Mr. Wajahat Saeed Rana General Manager, GSC NTDCL	gmgsc@ntdc.com.pk +92 321 4441500
61.	Ms. Rabia Atiq Assistant Manager Planning (Power) NTDC	rabiaattiq@live.com +92 333 4552090

#	Delegate's Name and Organization	Contact Information
62.	Ms. Kiran Zafar Assistant Manager Planning (Power) NTDC	kimz.06@hotmail.com +92 321 4694086
63.	Ms. Nadia Ahsan Deputy Manager Planning (Power) NTDC	nimtiaaz12@lycos.com 0300-8886892
64.	Mr. Khadim Hussain NTDCL	khadim@ntdc.com.pk +92 347 4440222
65.	Muhammad Sakhawat Manager, System Protection, NTDC	Cell: +92 3474447759
Sri Lanka		
66.	Mr. A.L.Z. Hussain Project Manager, (NTDNDAEIP) Ceylon Electricity Board	alzhusain@gmail.com alz.hussain@ceb.lk Cell: +94 714298164 Fax: +94 11 2682959
67.	Mrs. G.P. Senanayaka Electrical Engineer (WPS I) Ceylon Electricity Board	eeprocwps1@ceb.lk Tel: +94 11 2638852 Cell: + 94 714115582

#	Delegate's Name and Organization	Contact Information
The World Bank		
68.	Mr. Anjum Ahmad, Senior Energy Specialist, The World Bank, Pakistan	aahmad2@worldbank.org
NTDCL's Focal Persons		
69.	Ms. Sehrish Mubeen Assistant Manager, NTDCL Focal Person, NTDCL	sehrish.mubeen15@hotmail.com +92 347 444 0500 Tel: +92 42 992 02597
SAARC Energy Centre, Islamabad		
70.	Mr. Muhammad Naeem Malik Director	naeemmalik@saarcenergy.org Tel: +92-51-2221943 Fax: +92-51-2221937 Cell: + 92 305 5555233
71.	Mr. Salis Usman, Program Coordinator	salis@saarcenergy.org Tel: +92-51-2228802 (Ext 110) Fax: +92-51-2221937 Cell: +92-334-9703178
72.	Ms. Saira Ahmed Communication Specialist	cs@saarcenergy.org Tel: +92-51-2228802 (Ext 105) Fax: +92-51-2221937 Cell: +92-334-5551982

#	Delegate's Name and Organization	Contact Information
73.	Mr. Rehan Yousaf, Administrative Officer	adminofficer@saarcenergy.org Tel: +92-51-2228804 (Ext 113) Fax: +92-51-2221937 Cell: +92-321-5693781
74.	Mr. Yousaf Khan, Accounts Officer	yousaf@saarcenergy.org Tel: +92-51-2228807 (Ext 115) Fax: +92-51-2221937 Cell: +92-333-5287827

Brief Pictorial View of the Promotion of ICS







