TRANSITION OF COOKING FUELS IN INDIA

Abstract

Cooking fuels transition is more important part of the sustainable development. The fuels transition from traditional biomass to clean cooking fuels secured better health for women and children and over all improves the standard of living of people in developing countries. The solid fuels use for cooking in households leads to household air pollution and harmful impacts on health. Still most of the developing countries use traditional solid fuels even increasing awareness and revolution on use of clean sources of energy for cook which is harmful to both the environment and human health. In India, household air pollution which occurs from burning solid fuels is a significant contributor to the total disease burden, approximately 6, 00, 000 deaths in 2019. It is 68% of population access clean cooking fuels in India where 91% in urban and only 54% in rural. The present paper attempted to find out the transition of cooking fuels and government policies initiatives to improve the use of clean fuels in India.

Keywords: Cooking fuels, Sustainable development, Solid fuels, Developing, Environment, Health.

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I. INTRODUCTION

Cooking fuels transition means the accessing clean sources of fuels ignoring the traditional biomass. Clean energy has the most important role in economic, social and sustainable growth. The uses of clean cooking fuels secured the good health especially women and children and over all improve the standard of living of people. Burning of solid fuels to prepare food traditional cook stoves in households with poor ventilation leads to household air pollution and harmful impacts on health (CEEW, 2020). Even the increasing awareness and revolution on use of clean sources of energy for cook, most of households in developing countries continue to use solid fuels, which is harmful to both the environment and human health. Around 3 billion people, mostly in low and middle-income countries, unable access to clean energy sources for cooking resulting nearly 4.3 million premature deaths worldwide (WHO, 2012). Energy is at the heart of many of Sustainable Development Goals (SDGs) considering the enhancing of accessing electricity, enlargement of clean cooking fuels and to reduce prematurely death million every year around the world due to air pollution resulting from dirty fuels use for cooking. Clean cooking is one of the target of SDG 7 where target 7.1 comprise of two targets i.e., 7.1.1 access to electricity and 7.1.2 access to clean cooking fuels. The global population without access to clean cooking remained largely unchanged since 2010 to 2018, standing at close to 3 billion (Tracking SDG7, 2020).

In India, household air pollution which occurs from burning solid fuels is a significant contributor to the total disease burden, accounting for nearly 600,000 deaths in 2019 (CEEW, 2021). Around 69% of global population access clean cooking fuels where 86% in urban and 48% in rural area (WHO, 2021). In India 68% of population access clean cooking fuels and it is 91% in urban and only 54% in rural.

II. TRANSITION OF COOKING FUELS IN INDIA

Generally if we observed that cooking fuels transition have taken place in India but it was very slow in past period. Rapid transitions have been taken place from launching of Pradhan Mantri Ujjawala Yojana (PMUY) in 2016. The following table 1 show percentage of households accessing different sources of energy for cooking in India from 1993-94 to 2021.

Table 1: Primary source of energy used for cooking all India from 1993-94 to 2020-21

Year	coke/ coal	firewood & chips	LPG	dung cake	kerosene	no cooking	Other	Total
Rural								
1993-94	1.4	78.2	1.9	11.5	2.0	0.7	4.1	100
1999-2000	1.5	75.5	5.4	10.6	2.7	1.1	3.1	100
2004-05	0.8	75.0	8.6	9.1	1.3	1.3	3.8	100
2009-10	0.8	76.3	11.5	6.3	0.8	1.6	2.7	100
2011-12	-	60	15	10	9	1	15	100
2018	-	44.5	48.3	5.5	-	0.6	1.1	100
2020-21	0.3	46.7	49.4	3.0	0.1	0.2	0.3	100
Urban								

1993-94	5.7	29.9	29.6	2.4	23.2	6.3	3.0	100
1999-2000	4.1	22.3	44.2	2.1	21.7	4.3	1.3	100
2004-05	2.8	21.7	57.1	1.7	10.2	4.9	1.6	100
2009-10	2.3	17.5	64.5	1.3	6.5	6.5	1.5	100
2011-12	-	14	68	1	6	7	4	100
2018	-	5.6	86.6	0.5	-	4.1	3.2	100
2020-21	0.5	6.5	89.0	0.3	0.5	1.7	1.5	100

Sources: NSSO 66th, NSSO 68th (2011-12), NSSO 76th (2018) and NSS 78th (2020-21)

Table 1 revealed that transition of fuels is faster in urban area compare with rural area. The clean fuel (LPG), only 1.9 percent of rural households used as a primary source of cooking energy in 1993-94 and it became 49.4 percent in 2020-21. In urban area, it was 29.9 percent in 1993-94 and then 89 percent in 2020-21.

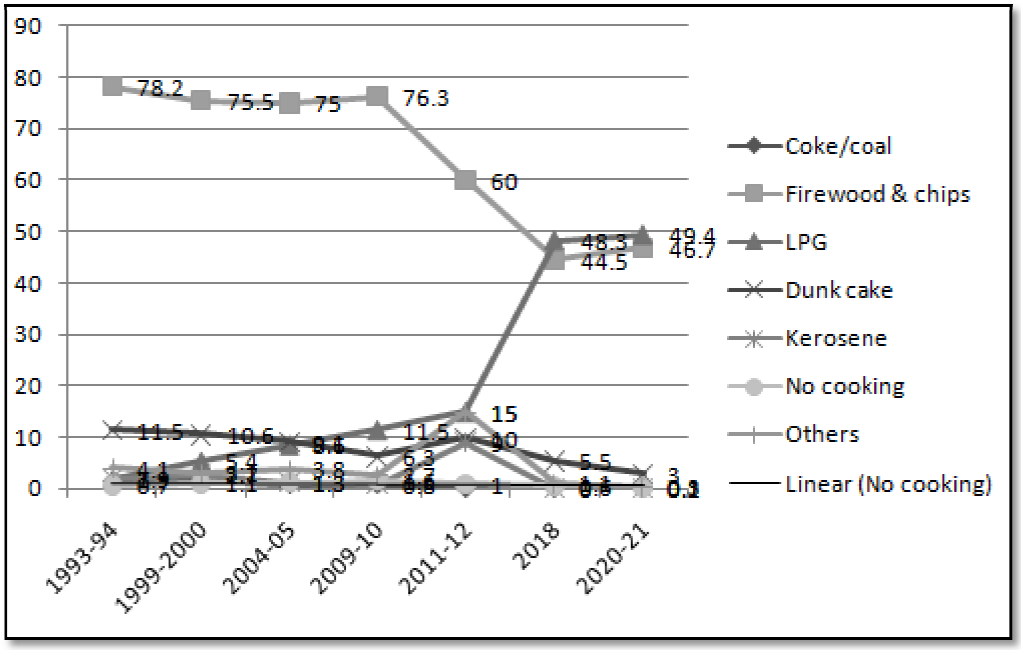

Figure 1: Transition fuels use in Rural India from 1993-94 to 2020-21

Source: Sources: NSSO 66th (2009-10), NSSO 68th (2011-12), NSSO 76th (2018) and NSS 78th (2020-21)

The above figure 1 show the simple trend line primary cooking fuels used by the rural households all India from 1993-94 to 2020-21. It is observed that only two sources of energy are main i.e. LPG and firewood that are approaching each other. The LPG is increasing and firewood is decreasing. It is also found that all other sources of energy used for cooking by the households are decreasing; some of them increase till 2012 but they start declining from 2012. It is cleared that cooking transition has taken in India since the primary use of clean cooking fuels increase in every decade.

The figure 2 indicate that the urban households use primary sources of energy used for cooking all India from 1993-94 to 2020-21. It is revealed that the used LPG is increasing very rapidly but other sources of energy are declining. Firewood & chips was already 29.9 percent in 1993-94 and it became only 6.5 percent. The LPG was 29.6 percent in 1993-94 and 89 percent in 2020-21. So it is observed that transition of clean cooking fuels is faster in urban area compare with rural area.

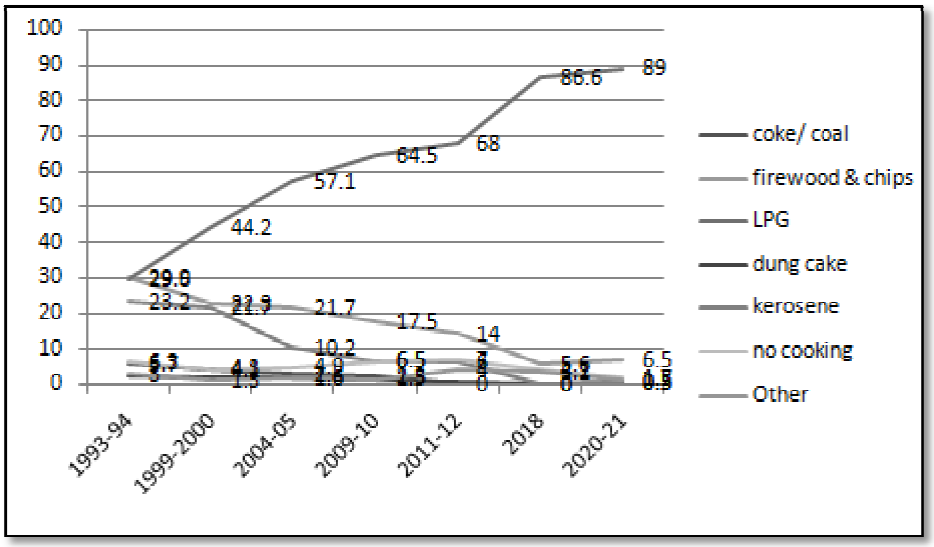

Figure 2: Transition fuels use in urban India from 1993-94 to 2020-21

Source: Sources: NSSO 66th (2009-10), NSSO 68th (2011-12), NSSO 76th (2018) and NSS 78th (2020-21)

The figure 3 indicate that the rate of households access different sources of cooking energy in 2020. LPG is accessed by 85 percent of households and 5 percent electricity and firewood (49.4%), crop residue (15.4%), dunk cake (23.70%), and others (13%).

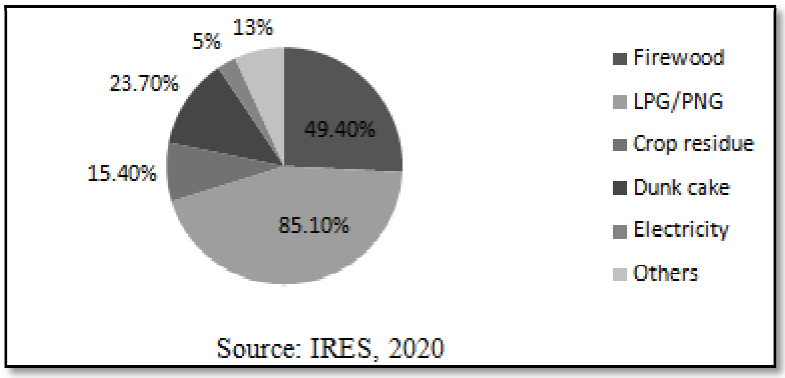

Figure 3: Different Sources of Cooking Energy

Source: IRES, 2020

The figure 4 indicates the rate households use primary sources of energy for cooking all India in 2020-21. The 62 percent of households use LPG as primary source of energy for cooking and firewood, chips & crop residue (33.8%), other natural gas (0.5%), dunk cake (2.2%), kerosene (0.2%), coke/coal (0.4%), gobar gas (0.1%), electricity (0.1%) and no cooking (0.7%). It is found that only 62.6 percent (LPG, electricity and other natural gases) of households are using clean fuel as the primary source of energy for cooking. Observing the both figures 3 and 4, 90 percent of household are assessing clean fuels for cooking (LPG 85% and 5% electricity) but only 62.3 percent are use clean fuels as their primary for cooking. So the rate of households accessed to clean fuel is significant but primary use it for cooking is insignificant.

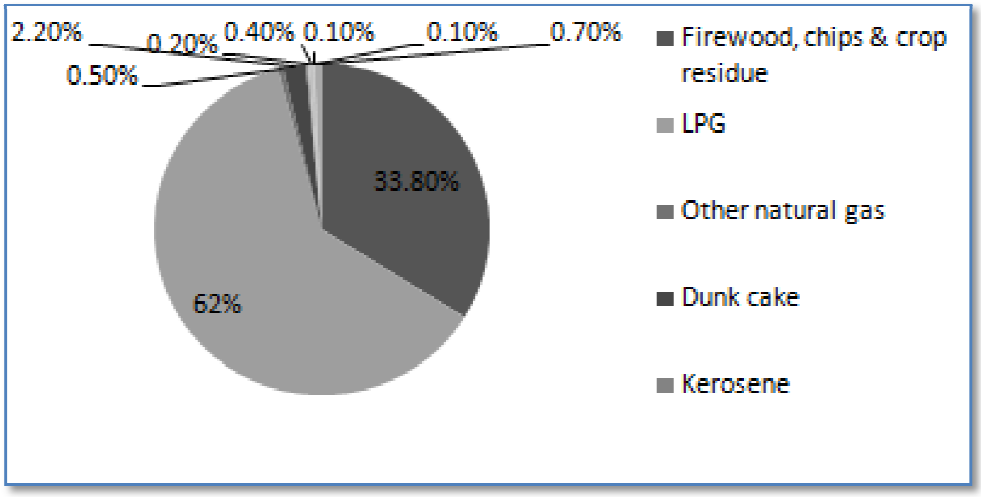

Figure 4: Primary Sources of Energy for Cooking

Source: NSS 78th round (2020-21)

III.TREND OF RATE OF POPULATION ACCESS TO CLEAN COOKING FUELS IN INDIA

Throughout this paper we have found transition cooking fuels all o India from 1993-94. Now we can analyse trend of rate of population access to clean cooking fuels in India. The World Bank has given the information that the different nations access to clean cooking fuels and technology basis of population. The figure 3 show the simple trend line that the percentage of population access to clean cooking fuels in India. It revealed that the percentage of urban population is more than the rural and overall that access the clean fuels over the different period. The Indian 22% of population access clean cooking fuels in 2000, then increases to 68 % in 2020. While, in rural, area it was only 7% and 50% in urban area in 2000. In 2020, it became 54% in rural and 91% in urban area.

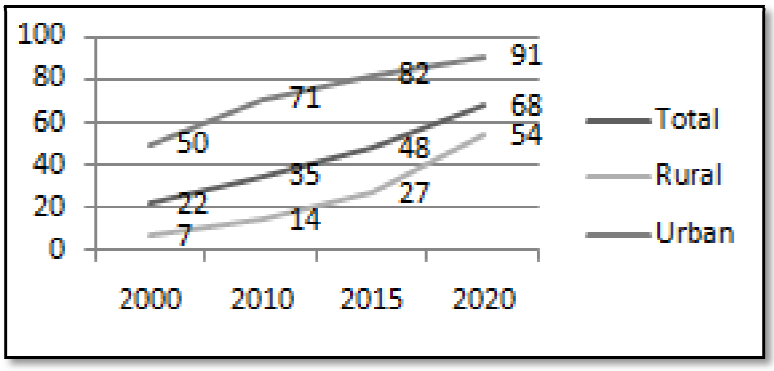

Figure 5: Rate of Population access to Clean cooking fuels in India

Source: World Bank https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS

IV. INDIAN GOVERNMENT POLICIES TO IMPROVE CLEAN COOKING FUELS

Throughout this paper, we found that poor access to clean cooking fuels in rural areas of India in the earlier period. To improve this poor access to clean cooking fuels, the government has started various schemes about LPG that easily accessible and affordable for low-income families. Direct benefit transfer for LPG (DBTL) was launched on 1st June, 2013 while 291 districts were cover firstly and later it is extended to whole districts of the country to provide subsidy directly in beneficiaries' bank account (Ministry of Petroleum and Natural Gas, Government of India). To remove subsidy diversion and clear out the fake connections is the main objectives of this programme.

The 'Give It Up campaign was launched on 27 March, 2013 for the middle-class families give up their LPG subsidy and it could be transferred to low-income families. Through this programme arround 1.13 crore people have given up their subsidies.

Pradhan Mantri Ujjawal Yojana (PMUY) was started in 2016 that a female belongs to below poverty line (BPL) family get LPG. The main objectives of this programme were empowerment of women and avoid health risks which are result from solid fuels use for cooking. Under this world larges clean cooking energy programme more than 80 million Indian household had benefited between 2016 and 2019. As per 76th round of NSSO, 48% rural household are using LPG in India.

In India, the cost of Piped Natural Gas is less than LPG. As per data released by the Petroleum Planning and Analysis Cell (PPAC) in 2021, September, 8,217,913 were connected in the country. However, around 29 crore households were not connected yet due to lack of infrastructure to delivered natural gas through pipes for the purpose of domestic cooking.

The Union ministry of power launched the "Go Electric" Campaign on February 2021with aim to create awareness to the masses about the advantages of prefer to electrical cooking appliances such as induction cooktops, electric pressure cookers, etc. The Union power minister RK Singh on some events has highlighted the practice of clean and safe

electric cooking and advised the people to use e-cooking which is advantageous to consumers due to low heat wastage during the cooking process (Sinha, 2022).

V. CONCLUSION

Accessing clean cooking fuel is one of indicator of SDG 7 that universal access by 2030.Considering the current scenario that the clean cooking fuel access in the developing world, the target of universal access to clean cooking by 2030 as per SDG 7 of United Nations Development Programme (UNDP) 2015, cannot be achieved. Its will depend various factors including large investments, stakeholders participation and dynamic strategy policy apparatus. To enhance the rate access to clean cooking around the world, it has been estimated on a large scale investment should need around $4.4 billion annually (Sinha, 2022). In India most of the household use traditional solid fuels in cooking even they have LPG, which impact on environment, economic and personal health problems specially women and children disproportionately. Thus effort should be given transition of traditional solid fuels to more energy-efficient modern cooking fuels to reduce smoke emissions, time needed to procure fuel and time spent cooking. Most of rural women are illiterate and they don't about adverse effect of solid fuels that so government and local agency should be given priority on women education and awareness programme on clean cooking fuels.

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