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Political economy of water pollution in Pinga Oya, Mahaweli River

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ABSTRACT

The political economy related water pollution is a serious crisis in most of the developing countries. This paper focuses on the relationship between the political economy and water pollution in Pinga Oya tributary of the river Mahaweli in Sri Lanka. It is based on the study of effects of socio-economic and political factors in solid waste generation and water pollution in river Mahaweli. The unauthorized construction, direct solid waste disposal into water bodies and the untreated dumping sites due to political economic issues are supposed to be some of the major causes of water pollution.

The main objective of this paper is to investigate the causal relationship between political economy of solid waste disposal and water pollution in Pinga Oya quantitatively and qualitatively. Three hundred and fifty (350) semi-structured questionnaires for households (200) and shop-owners (150) and 20 in-depth interviews with key informants were used to collect quantitative and qualitative data from Pinga Oya watershed areas. The samples were selected purposively and data were analysed on descriptive and qualitative basis.

It is important to mention that political economy of the study area determines the nature and volume of the solid waste generation and water pollution of Pinga Oya. Economically poor people are more concerned about water pollution caused by improper solid waste disposal than rich people. Those who are engaged in business and foreign employment cause more damage to Pinga Oya than government servants and others. This study further reveals that those who earn higher monthly income generate more solid waste compared to lower income groups as a result of their changing consumption pattern and livelihood. It is the economically rich who violate many of the environmental rules and regulations which indirectly pave the way for water pollution in Pinga Oya. Moreover, economically powerful people as well as those who are in the top of employment

ladder are well supported by politicians and authorities to violate environmental laws related to waste disposal and water resources of Pinga Oya. The informal political power, bribery and corruption play hidden role in improper solid waste management and water pollution of Pinga Oya.

INTRODUCTION

Political economy can be defined as a discipline that deals with the relationship between the individual and the society and between the markets and the state, using techniques from economics, politics and sociology. Yet another definition of political economy is that it is an interdisciplinary branch of study which combines branches of economics, politics and law in order to understand how political institutions, its environment and capitalism influence each other (www.economywatch.com). The current political economy of a society largely depends on the nature of neo-liberalism. Thus, it is the neo-liberalism that regulates the structure and the function of modern political economy.

To the extent that neo-liberalism, with its calls for letting “the market” address social and economic woes, has become the dominant model for political economic practice today, it should be expected that environmental governance too, would be shaped by the neoliberal imperative to deregulate, liberalize trade and investment, marketize, and privatize (Mansfield, 2004). Neo-liberalism’s adventures and misadventures are increasingly well-chronicled, and political activism has indicted neo-liberalism as both a political economic and environmental debacle. Yet connections between neo-liberalism, environmental change, and environmental politics remain under-explored in critical scholarship (McCarthy and Prudham, 2004).

Today, many nations and local communities are engaged in serious conflicts regarding water issues all over the world. The present conflict over water is well explained in “Water Wars” by Shiva (2002). Every river in India has become a site of major, irreconcilable water conflict. Yamuna, Ganges, Narmada, Mahanadi, Krishna and Kaveri rivers have been the centre of court cases among the states that disagree over ownership in the distribution of water. The conflict between Karnataka and Tamil Nadu over distribution of water of River Kaveri for instance has led to bloodshed and brought down governments. National level crisis was experienced due to water politics of Maavil Aaru incident very recently in Sri Lanka.

Mahaweli is the longest river in Sri Lanka. Water of river Mahaweli is polluted mainly by soil erosion, agricultural pollutants, industrial pollutants and solid waste disposal (The Ministry of Forestry and Environment, 2000). The direct solid waste disposal into Mahaweli water and having dumping sites near or on the river and canal banks have been one of the leading causes of water pollution. There are many issues and inter-institutional conflicts in relation to solid waste management. It is the domestic solid wastes that are largely found in waste collection and most of

these domestic solid wastes are produced by day-to-day consumption of householders.

Low dissolved oxygen levels (5 mg/l to 4 mg/l) and elevated NO₃ – N levels (0.5 mg/l to 1.75 mg/l) have been reported in Pinga Oya during past studies. There is a strong relationship between fecal pollution and human settlements and the fecal coliform levels reported as high as 7500 cfu / 100 ml indicate frequent biological contamination from human excreta and solid waste discharged from houses and shops (Herath, 2003).

The area of study

There are many important tributaries present in the Mahaweli Upper Catchment. Nanu Oya, Middle canal, Pinga Oya are very critical among them in terms of water pollution. Pinga Oya has a perennial flow with major seasonal fluctuations where the roaring flood flows during the monsoon become a trickling cascade in the dry season. The stream originates in the mild rolling terrain of Pujapitiya division of Kandy district in the Central Province and flows through a course of 6 km before it meets Mahaweli river just upstream of Polgolla diversion barrage. The upper part of the Pinga Oya catchment belongs to Pujapitiya DS division which is a mildly populated rural and sub-urban area with a largely agricultural land use, whereas the downstream part belongs to the densely populated Akurana division. The stream runs through Akurana town which has the second highest population density (1831 per km²) in Sri Lanka (Hettiarachchi, 2003).

Although there are many Divisional Secretariats falling on upper catchments of the Mahaweli area, only Akurana, Pujapitiya, Harispaththuwa and Pathadumbara have been selected as the area of study. However, Akurana was mainly focused on the research considering the necessity of making an in-depth analysis as Akurana town area is considered as highly responsible of causing severe damage to Pinga Oya and its eco-system.

Table 01 shows the population by ethnicity of general study area of Akurana, Pujapitiya, Pathadumbara and Harispaththuwa.

Table 01: Population by ethnicity in Akurana, Pujapitiya, Pathadumbara and Harispaththuwa DS divisions

Divisional Secretariat	Total population	Sinhalese	Tamils	Muslims	Other
Akurana	59317	18260	3695	37213	149
Pujapitiya	57644	46864	1805	8921	64
Pathadumbara	85721	64612	3029	17759	321
Harispaththuwa	83935	73149	1906	8669	211

Source: Census and Statistic Department, Kandy (2006)

According to Kandy District Census and Population Report (2006), about 62% of the population in Akurana DS is Muslims and there is a small community of Tamil estate workers too. The Muslim population is largely concentrated in the Akurana town area while the adjoining mildly populated area has a Sinhalese majority. According to 2006 GN's reports of Akurana DS, there are 573 registered shops in Akurana but there are large number of unauthorized shops and boutiques which are not registered. They are mostly constructed on the banks of Pinga Oya or on some occasions even in the canal. It is also important to note that since A9 (Kandy - Jaffna) road goes through Akurana town, the land market is keep on increasing as a result of high value for commercial plots. . Although Akurana belongs to Pradeshiya Shaba, 60% of people in Akurana are having hilly land less than 20 perches and there are around 200 two stories luxury houses. As a result, there is serious land scarcity and higher demand for land prevail in the area. Even though Akurana community seems to be economically rich, there are considerable number of poor families and a large number of lower middle class people. However, many of them do not like to show that they are economically poor because of symbolic and competitive life style that could be found among Akurana Muslims. 5690 families out of 13076 (43%) are Samurdhi beneficiaries. Many middle class people spend their earning mainly on construction of houses and buying vehicles. According to the in-depth interviews conducted, some of them raise loans and go for leasing to buy vehicles.

METHODOLOGY

Questionnaire surveys are found to be very useful in understanding the field situation and collecting basic quantitative and qualitative information. For this purpose, 350 questionnaires were administrated on households (200) and shops (150) located in Pinga Oya catchment, in the above mentioned four Divisional Secretaries. The majority of the questionnaires were administered in Akurana DS based on the physical proximity to Pinga Oya. The main aim of using purposive sample is to include household respondents from different ethnic, educational and gender backgrounds and different types of business owners.

The in-depth interviews are the major data collection method used to gather information related to qualitative aspects of livelihood, consumption, power relations, solid waste generation and their impact on the water pollution of Pinga Oya. The quantitative data collected from questionnaire survey were verified and explained in detail by qualitative data and information collected through the in-depth interviews. Twenty (20) in-depth interviews were conducted including relevant key informants and stakeholders representing civil society, business community and state institutions. In addition to these primary data, useful secondary information from the relevant sources were also collected.

RESULTS AND DISCUSSION

It is very important to understand the political economy of the study area; especially in Akurana. With the introduction of open economic policy to Sri Lanka in 1978, the political economic capacity of the Akurana community turned to be more powerful through the local political leadership. Thence forward, people in this community started enjoying some specific political economic rights and privileges. Since there have been large number of voters within this limited physical area of Akurana, people of this area are having higher potential of bargaining political power. Thus, they were under the leadership of one political party for a long period enjoying liberal economic freedom. This community was capable enough to empower their trading activities nationally as well as globally with the massive support of free market economic policy that time. The political power of Akurana became more powerful after 1991 administrative reform act. According to that administrative amendment, Harispattuwa DS Division was divided into three new Divisional Secretariats known as Akurana, Pujapitiya and Harispattuwa. As a result, Akurana people received separate Divisional Secretariat and local government body (Pradeshiya Shaba). Moreover, people in Akurana gained the maximum benefit of neo-liberal economy for their local and international trade with the help of this political economic autonomy. It is not only the people of Akurana but people in other Divisions also benefited from this political economic boom that took place during this era.

In addition to the foreign trading, many of the middle class people had the opportunity to be employed in Foreign Service with the auspicious of then political leadership. This situation facilitated movement of Akurana people out of the country. Even today, employment in European countries and Japan play leading role in the economy of Akurana Muslims. The economic growth and political power influenced each other. Thus, political economy of this area turned further powerful and Akurana itself became almost like a small socio-economically and politically powerful territory. For example, there is a greater trend of promoting English language at their day-to-day routine. The rich and middle class people see English language as an important life style. That is visible from the presence of around 10 international schools and Arabic colleges (religious school) in that area.

Muslims in Akurana attempt to maintain their own cultural identity based attitude, education, marriage practices, consumption and trading fed by the above discussed political economy. These cultural identities are unique to them and different from Muslims from other parts of the country. Although there are some conflicts among Muslims in some area of the country on the basis of performing religious ritual, there is higher degree of social integration among Akurana Muslims and mutual helping to empower. For example, Muslim youth of Akurana who work in Japan are having an association to help their native place. Moreover, the strong cultural identity and political economic backgrounds of Akurana Muslims have made them politically powerful and more advantageous community since a long time compared to other Muslims and Non-Muslims in the region.

As for employment patterns of people in Akurana, 16% of them are engaged in government employment, 36% and 46% are engaged in self and private employment respectively. In general, around 60% of the people are engaged in business related to either self or on private basis. The 2006 GN reports further states that there are 1418 persons working abroad and 82% of them are males. Many of these Muslims are mainly employed or engaged in business in United Kingdom, South Africa, Switzerland and Japan. However, some of the information related to migration are not recorded in any of the official reports. The foreign remittances sent to Akurana by these workers have been very influential in changing socio-economic and political situation of Akurana Muslim community. Akurana Muslim traders are supposed to be commercially potential and powerful. They have many commercial establishments in leading towns such as Kegalle, Kandy, Kururnegala, Matale, Anuradapura and Colombo. The financial in-flow into Akurana by these businesses has also negatively impacted on the environmental consciousness of people and eco-system of Pinga Oya.

According to the household questionnaire survey conducted in four divisional secretariats of Pinga Oya catchment, (Akurana, Pujapitiya, Harispattuwa, Pathadumbara), 89% of respondents stated that Pinga Oya is mainly polluted due to solid waste disposal and rest of the respondents disagreed with this statement. Moreover, 53% of respondents expressed that there is a relation between monthly household income and amount of solid waste generation and 47% of the respondents indicated that there is no relationship between these two variables. In another finding, 40% of respondents agreed that solid waste generation and life style are related. 33 % respondents made no response in this regard and rest of the 17% disagreed with the statement.

The socio-economic background and solid waste disposal

It is important to discuss the findings of the questionnaire survey and in-depth interviews in order to understand the causal link between the political economy of solid waste disposal and water pollution in Pinga Oya. There is a positive relationship between socio-economic background of people and disposing waste into Pinga Oya (Tables 02 and 03). According to Table 02, different types of shop owners dispose solid waste into Pinga Oya at different levels. Although it was mentioned that all (68%) the shop-owners disposed solid waste, respondents stated that 16% rich and 05% middle level shop-owners dispose solid waste into Pinga Oya. These data brings evidence that rich and middle class shops generate more solid waste and attempt to dispose them into water bodies.

Table 02: Categories of shop-owners disposing solid waste into Pinga Oya

Type of shops owners	Frequency	Percentage
Rich shop owners	24	16.0
Middle level shop owners	8	5.3
Poor shop owners	8	5.3
All three types	103	68.7
Others	7	4.7
Total	150	100.00

Table 03: Category of people disposing solid waste into Pinga Oya (based on household income groups)

Social class	Respondent Income groups					Total
	<10000	10000-15000	15001-25000	25001-35000	>35000	
Rich	13 (36.1%)	14 (28.0%)	11 (16.2%)	4 (17.4%)	4 (17.4%)	46 (23%)
Middle class	6 (16.7%)	7 (14%)	6 (8.8%)	3 (13%)	3 (13%)	25 (12.5%)
Poor		2 (4%)				2 (1%)
All three classes	13 (36.1%)	26 (52.0%)	50 (73.5%)	16 (69.6%)	12 (52.5%)	117 (58.5%)
Other	4 (11.1%)	1 (2.0%)	1 (1.5%)		4 (17.4%)	10 (5.0%)
Total	36 (100%)	50 (100%)	68 (100%)	23 (100%)	23 (100%)	200 (100%)

There is another class based analysis of solid waste disposal into Pinga Oya. Table 03 clearly points out that lower income group respondents say that it is the rich (above 35000/-) and middle (between 15000/- and 35000/-) class people who mostly dispose solid waste into Pinga Oya whereas higher income groups accept that poor people do not dispose waste into water. It is also important to note that only the middle and upper middle class people of Akurana spend higher amount for their monthly consumption because of their higher buying capacity caused by higher level of monthly household income. Sometimes, considerable number of respondents was reluctant to indicate their monthly income and amount spent for consumption for the fear of being caught for the government tax.

Livelihood, consumption and waste generation

Significant relationships were found among livelihood, consumption and waste generation. According to this study, these three aspects are well linked and influence on water pollution of Pinga Oya. According to the questionnaire survey, the employment distribution of the study area is; government 13.5%, business 36.5%, foreign related jobs 14%, self employment 9%, labourers 2%, other 3% and not employed 22% (Figure 01).

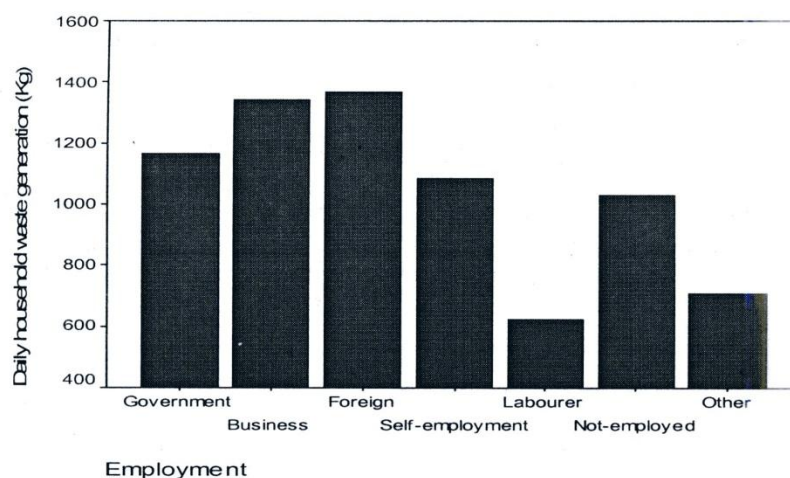


Figure 01: Relationship between employment and waste generation

Employment is one of the most important and immediate outcome of political economy under the neo-liberal setup. As mentioned above, majority of the people especially in Akurana area make their means of living by local or foreign trading or employment related to business. According to Figure 01, people who are engaged in business or foreign related jobs generate more solid waste compared to others. People who are engaged in government jobs stand in the third place in generating daily household waste. The not employed category indicates more generation of waste. This is an interesting finding. However, this unemployed category consists of housewives and this may be the reason for them to generate more waste as they are involved in household activities most of the time.

The relationship between monthly consumption and waste generation is another important factor that proves the impact of political economy on the solid waste generation and water pollution of Pinga Oya. The data of daily waste generation were collected from the questionnaire survey. The solid waste sample was collected from selected households for one week in order to verify the questionnaire data. According to the findings, daily household waste generation (kg) is a function of the monthly consumption (Rs). According to the regression

analysis, 48% of the waste generation is explained by monthly consumption. As explained above, people in Akurana always attempt to enjoy with their family members by consuming more and more goods. The qualitative part of the study reveals that the symbolic consumption is found to be very popular among them. Majority of the middle class and upper middle class people prefer to purchase goods from super markets they are interested in buying packed and bottled foods, vegetables and fruits for their consumption.

According to the report of Ministry of environment and natural resources (2005), the daily solid waste generation of Akurana Pradeshiya Sabha (PS) is 4500 kg and the composition of waste collection is mostly bio-degradable; short term - 48.% and long term-18.%, . This is higher than many other Pradeshiya Sabha and Urban Council. It clearly brings the picture of symbolically created over consumption and wasting food as a result of changing pattern of political economy.

Power relationship and water pollution

There is a link between the power relationship and solid waste disposal and its impact on the water pollution of Pinga Oya. According to the shop-owners' questionnaire survey, 34% respondents strongly agreed and 51% of respondents had the idea of "Political favouration or corruption prevent solving the crisis of water pollution Pinga Oya". The rest 15% of the respondents disagreed with the idea of "political favouration or corruption prevent solving the crisis of water pollution Pinga Oya". It is the political economic power that has promoted many of the unauthorized constructions. According to both quantitative and qualitative findings of this study, this study area has become a hot bed for unauthorized construction over Pinga Oya showing political power. This can be further understood by Table 04.

Table 04: Buildings constructed violating reservation rules by Divisional Secretariats

DS Divison				Total
	Yes	No	No response	
Akurana	68 (97.1%)		2 (2.9%)	70 (100%)
Pujapitiya	6 (85.7%)		1 (14.3%)	7 (100%)
Harispattuwa	23 (74.2%)	2 (6.5%)	6 (19.4%)	31 (100%)
Pathadumbara	37 (88.1%)	2 (4.8%)	3 (7.1%)	42 (100%)
Total	134 (89.3%)	4 (2.7%)	12 (8.0%)	150 (100%)

Table 04 indicates clearly that majority of the respondents (shop-owners) in each DS division clearly expressed that buildings were constructed violating reservation rules. Due to political and legal causes of water pollution in Pinga Oya, the informal power structure, bribery and corruption are supposed to be very critical in unauthorized construction on the river bank or in the stream. There is no reservation at all for many of the constructions. Since these buildings have been constructed on or in the canal, solid waste as well as waste water are easily disposed into Pinga Oya. However, according to records of Pradeshiya Shaba and Divisional Secretariat, all these buildings have been legally approved and provided with all the infrastructure facilities by the responsible institutes. Many of these constructions have been given approval because of bribery and informal political relationships. The findings of in-depth interviews and stake holders' meetings pointed out that the most important point is that Muslims in Akurana are more powerful than the Sinhalese in other divisions due to their strength of political economy.

In addition to political influence on proper waste disposal management, there are many institutional conflicts in terms of environmental management. 60% of the shop-owning respondents stated that solid waste crisis remained unsolved due to uncompromising power relation among the different institutes. 29% of respondents did not respond regarding this statement and rest 12 % disagreed with it. Thus, majority of respondents believe that there are many contradictions among the Pradeshiya Shabawa, Divisional Secretariat, Mahaweli Authority, Roads Development Authority and Water Supply and Drainage Board with regard to sustainable solid waste management. However, institutes with more political economic power become dominant in this process. For example, Pradeshiya Shabawa which is having more political economic power compared to other institutes plays a leading role in solid waste management positively or negatively.

Finally, according to the household questionnaire survey, it is possible to state that, 38% of respondents perceived that there are political influences on proper solid waste management and 32% stated that no political influence, the rest 30% made no response in this regard. Although people know the political influence on solid waste management, they are reluctant to come out with right response due to fear or political bias. That may be the reason for considerable number of people to be in the 'no response' category. The political influence on solid waste management can be found mainly in purchasing or maintaining dumping site and machineries (vehicles), taking legal action against improper waste disposal and violation of reservation rules.

CONCLUSIONS

The current political economy as influenced by neo-liberalism is having negative relationship with the environment. The livelihood and changing consumption patterns as well as politically motivated free market based trading have become powerful tools of the modern political economy in Sri Lanka with the great

influence of mass culture. The political economy of this nature well-developed and expanded in Akurana after the open economic policy and proportionate representative system with party politics introduced in 1978. With the influence of the specific political economic set up in the study area, people started enjoying their lives irrespective of environmental conservation and health.

Since economic strength and political power influenced each other, Akurana itself became almost like a small socio-economically and politically powerful territory with its own cultural identity. The socio-economic action of people mostly influenced generating more and more solid waste and the political power relationships motivated people to violate environmental rules and proper solid waste management process. As a result, the improper waste disposal and other anti-environmental behavior of people caused the water pollution of Pinga Oya. Finally, it is important to note that economically potential as well as politically powerful people generate more solid waste, do more damage to environment and are mainly responsible for the water pollution in Pinga Oya whereas, economically and politically poor people who mostly utilize water of Pinga Oya become the victims of water pollution.

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