Environmental Audit report on Water Pollution of the Kelani River

Report Number : PER/B/ENV/2018/01

National Audit Office

Environmental Audit Division

1. Executive Summary

The Kelani river, the second largest river and the fourth largest water basing in Sri Lanka, being providing drinking water to approximately 80 per cent of the population lives in the western province is the formost water source. Nearly 10,511 factories are situated near this river valley and it was observed that the tendency of being polluted river water is increased due to factories and domestic related activities. Moreover, in the examination of activities of the two Export processing zones located near the Kelani River observed that the waste water emitted from the operation of those zones disposed of to the interior water sources and environment in a manner non – compliance with standard parameters and specific treatments. As the disposal methodology of hazardous and innocuous waste is not properly managed and the disposal methodologies of sludge generates after being purified waste water is not environment friendly applied the impact of there is finally added to the water sources. Even though the ascertainment of economic benefits related to Kelani River are improved, it was observed that the contribution of all parties for the protection of environmental splendour and the environmental value of the river is minimal. In the examination of the identification of water pollution criteria observed that many places with main bridges transcended, the standard parameters of the Central Environmental Authority. The cost needs to be incurred on water reservoirs for the supply of drinking water to general public is risen. It was also observed that provisions made in the National Environment Act on fines and penalties imposed on parties do not follow the methods determined by the Central Environmental Authority in the disposal of waste water in to the interior water sources are insufficient.

Industries mostly affected the water pollution of Kelani River, and the Environmental protection License obtained by the seethawaka export processing zone situated in the kelani valley and operates as a main industrial estate has not been renewed since 08 years. The common waste water purification centers available to 37 industries in these zone have been put up without sufficient capacity. Being inactivated the plant exists for the destruction of micro – organisms in the waste water purification center is also Environmentally effected. Moreover, as observed in audit, there was no proper methodology for removing sludge generates from the factories of

Seethawaka and Biyagama export processing zones and sludge is mixed up with rain water and absolved waste in to the soil, resulting a risk of being polluted water sources.

In the observation visits made in respect of Kelani River revealed main causations to pollute river water that evaded river banks as a result of encroachments in the two banks of the river, adding solid waste, sewage and waste water disposed of by hotels built in the river boundary and encroached houses in to the river water, disposal of waste water from the vehicles service stations and factories without being purified.

In considering economical, social and esthetical benefits obtain by us from the Kelani River which is subject to pollute daily, causing hasty actions of the man, it is formost important of the active contribution of the government entities, comprising Central Environmental Authority, Department of Irrigation, Local Authorities ,Urban Development Authority ,Water Supply and Drainage Board which take the main responsibility of protecting Environmental, economical and social values of the Kelani River. Thus, all existing laws, rules and regulations need to be revised in a manner establishing the functions perform by relevant parties in respect of protecting environmental balance and make the requirement of other procedures there to in active form.

2. Back ground and nature of the Report

2.1. Background

Of the river basins situated in Sri Lanka, the fourth largest one is the Kelani River which flows down along with boundaries of 34 Divisional Secretarial divisions belong to 07 districts in 03 provinces of Western, Central and Sabaragamuwa. The Kelani river is utilized for the supply of drinking water requirement of about 80 per cent of the western province's population. Out of 103 river basins in Sri Lanka at present, the Kelani river is becoming a polluted river. After the flood faced by Sri Lanka in the year 1989, it has to face a similar flood in the year 2016 as well and the damage caused to Kelani River related areas was very high. Accordingly, the Kelani River has become a prominent river that effects the lives of the people living in the Kelani River related areas causing with high environmental damage.

2.2. Authority for Audit

The audit was carried out under my direction in pursuance of provisions in Article 154 (1) of the Constitution of the Democratic Socialist Republic of Sri Lanka and provisions of the National Audit Act No. 19 of 2018

2.3. Audit Objective

Evaluate threats caused to Kelani River basin belongs to the domestic water – belt in Sri Lanka, causes that effect its water pollution and the adverse effect on the environment from there and evaluate the operation of the legal mechanism exists in that connection.

2.4. Basis for the selection of topic

This topic is selected taking into consideration that the responsible government entities have taken action to prevent and minimize the undermentioned issues and their successfulness and the importance of identification of matters for further attention. Those issues include, the importance of purity of drinking water in the Kelani River basin which is a major source of getting various benefits and basically the fulfillment of drinking water requirement of the Colombo District, threat of human activities cause in the catchment areas of Kelani River and its beneficial areas.

2.5. Scope of Audit

2.5.1. Compliance with international standards

My audit is conducted in accordance with the International Standards of Supreme Audit Institutions (ISSAI 5110 – ISSAI 5140)

2.5.2. Government entities covered in the Audit

Fifty-three entities bear the responsibility of the implementation of anticipated programs in the period from 2016 to 2020 for the prevention of Kelani River pollution have been identified. Of these entities, attention was drawn in respect of functions carried out only by the following institutions.

a. Ministry of Mahaweli Development and Environment
b. Central Environmental Authority
c. Department of Irrigation
d. Water Resources Board
e. National Water Supply and Drainage Board
    - Ambathale Reservoir
    - Biyagama Reservoir
f. Police Environmental Unit

2.5.3. Scope

In reaching conclusions based on observations indicated in this report, the following observations has arisen in respect of the scope of audit.

- As a lot of entities contribute for the protection of Kelani river and a lot of time needs to be taken to obtain information from those entities, information was obtained only from 7 entities thereof
- Industries located in 07 Districts, related to Kelani river were not subjected to examination and the attention was only paid to factories situated near the reservoirs, fulfill drinking water requirement and the functions of industries and hotels situated in kithulgala tourist zone.

- The extent to which Kelani river is eroded annually and the environmental damages cause during flood seasons are not included therein.
- Three programmes implemented by various public and private entities for the protection of the Kelani River are covered in this Audit.

2.6. Audit Approach

2.6.1. Sources of evidence

Evidence is obtained from sources considers as material and enabling to reach reasonable conclusions thereon Sources include,

- Discussion notes
- Files
- Media reports
- Newspaper articles
- Magazines
- Field inspections
- Laboratory tests

2.6.2. Physical Approach

The following approaches are taken

a. Interviews held with few villages, covering the upper, middle and down areas of the river
b. Examination of water samples obtained from the common waste water purification centre of the two main Export processing zones and the place where purified water is disposed of to the river.
c. Confirm a relevant event by doing field inspection and taking photographs.

2.7. Audit Criteria

The following laws, rules, regulations and standards are considered in this audit.

a. National Environmental Act No. 47 of 1980 (National Environmental amendments) Act No 56 of 1988 (Annexe - 01)
b. Gazette extraordinary No. 1534/18 of 01 February 2008 of the Democratic Socialist Republic of Sri Lanka (Annexe - 02)
c. Drinking water standard No. 614 – 2013 implemented by the Sri Lanka Standards Institute (Annexe - 03)
d. Water Resources Board Amendment Act No. 42 of 1999 (Annexe - 04)
e. Gazette extraordinary No 1894/3 of 22 December 2014, including the national policies on water sources in Sri Lanka, their catchment areas, protection and conservation of reservations (Annexe - 05)
f. Sustainable Development Goals – Target 06 (Annexe - 06)
g. Renaissance Environmental Protection National programme – 2016 -2018 (Annexe - 07)
h. Cabinet paper No ඇ‍මැ/06/1346/221/024 dated 03 August 2006 for the amendment of National Environmental Act No. 47 of 1980 (Annexe - 08)
i. Sections 262 and 277 of the penal code (Cap 19) (Annexe - 09)
j. Rule under section 48 (5) of the Tourism Act No 38 of 2005 published in the gazette extraordinary No. 1963/28 of 20 April 2016 (Annexe - 10)
k. Departmental circular No. 8/2014 (Assets Management) dated 01 December 2014 of the General Manager, Department of Irrigation (Annexe - 11)
l. Categorization as part A, B and C of industries by which environmental Licence is obtained under gazette extraordinary No. 1533/16 of 25 January 2008 (Annexe-12)

3. Observations and Recommendations

3.1. Significance of the water resource

Water is a foremost wealthy natural resource belongs to Sri Lanka and a prime factor, contributes to the national economic development since history. As Sri Lanka is an agricultural country, various irrigation works give a foremost contribution to the agroeconomic from history to date.

APart a from that, the water resource in Sri Lanka has become significant source for industries, provision of services. Supply of drinking water, entertainments, tourism, and hydro electricity generation.

Environment and water has reciprocal relationship and the natural resources available in the environment challengeable due to causing adverse human activities in doing things with the environment by the man. As such, it is the responsibility of the man – kind to protect this water resource by keeping friendly environment which is a precious resource of the nature.

3.2. Kelani River

As the Kelani River is a unique resource in Sri Lanka, it takes the 4th place within 103 main river basins (Annexe - 13). It flows down from two branches namely Maskeli oya and Kehelgamu oya at the hill country and meets at polpitiya, 5 Km west from Ginigathhena. Since then it names as the Kelani River. The Kelani River begins from polpitiya flows down to the sea at Modara, Colombo covering 18.4 per cent of Nuwareliya District, 0.2 per cent of Kandy District, 3 per cent of Rathnapura District, 0.5 per cent of Kaluthara District, 44 per cent of Kegalle District, 14 per cent of Gampaha District and 19.9 percent of Colombo District.

There are 20 sub – water basins being nourished by the Kelani River and the total coverage Amounts to 233,335 hectares Of them sub – water basins make very high contribution consists of Gurugoda oya, upper central Kelani River and Kehelgamu oya. The length of the Kelani River is approximately 145 Km out of which water drainage area is approximately 2,280 square Km. The annual water mass is approximately 7,019,000 acre feet of which

about 64 per cent flows down to the sea. The Kelani River with a high value of natural beauty is a natural creation consists of 11 images.

The Kelani River, the main water source fulfils more than 80 percent of the drinking water requirement of the population of about 2,439,000 in Colombo District. Labugama and Kalatuwawa two reservoirs built in the upper part of the Vak oya, a branch of the Kelani River , Abathale and Pattivila pump houses situated in the Kelani River itself fulfils this water requirement. In addition, water of the Kelani River is mostly used for such industries of beverage, textiles, steel, petroleum products, tires, fertilizer and sand also for agricultural and other human needs.

According to the information obtained from the geographical information system branch of the Central Environmental Authority, there are 10,511 factories situated within the area related to the river from the beginning of the river to the place of reaching to the sea. Varied unauthorized and planned un human actions associated with this river can be identified.

3.3. Environmental Licenses

3.3.1. Needs of issuing environmental License

The license needs to be obtained by specific industries/ activities is cited as the environmental protection license declared under section 23 (b)(1) of the Central Environmental Authority Act and the entity to which license is issued and the validity period of the license is determined according to the nature of the industry. The prime intention of issuing this license includes, except being complied with the standards and criteria determined by the Central Environmental Authority, disposal of waste to the environment or deposit therein or emitted to the environment or activities causing environmental pollution, noise pollution and vibration need not be done. (Annexe - 01)

3.3.2. Nature of the environmental license and the method of renewing environmental protection license

In terms of the gazette extraordinary No. 1533/16 of 25 January 2008, of the Democratic Socialist Republic of Sri Lanka, industries need to be obtained environmental license are

identified under 3 main parts as A, B and C. According to the registration part of the industry, the annual renewable period is also determined. In terms of this gazette notification 80 industries in A part, 33 industries in B part and 25 industries in part C are identified. Environmental protection license of A and B parts and license of C part are issued by the Central Environmental Authority and local Authorities respectively (Annexe - 12)

Covering 3 provinces and 7 Districts, the Kelani river flows down and 10,511 industries covering 34 Divisional Secretariats are located in the related area of river.

As revealed in the examination of the issue of environmental licenses to 2,946 Industries belong to A and B category situated near the Kelani river, 41 industries out of part A industries subjected to audit having more environmental risk are operated without license where licenses of 205 industries are suspended. It was also observed that there were picarious 17 industries without any note in this regard. Details appear below.

	Part A	**Part B**
• Information not available (NA)	02	-
• Stopped licenses	205	580
• No licenses	41	04
• Exist currently in the process	192	67
• Exist in the renewal process	183	40
• with licenses	884	726
• No any note	17	-
	1524	1417

Table No – 01 (Central Environmental Authority – Geographical information system)

3.3.3. Laboratory Test Reports need to be presented in the renewal of Licenses.

In order to confirm the disposal of waste water of the industry in compliance with the standards and criteria passed by the Central Environmental Authority, a report from a laboratory, registered with the Central Environmental Authority needs to be submitted along with the renewal application. The number of laboratories registered with the Central Environmental Authority by 22 February 2018 amounts to 28 and a few laboratories have been registered with the Sri Lanka Accreditation Board and obtained the accreditation certificate (Annexe - 14)

Recommendations

I. Ensure the requirement of obtaining the environmental protection license, as the environmental detriment is very high when operates an industry, environmentally with high risk without a license.

II. At the time of not to renew the environmental protection license due to non – fulfilment of conditions stated in a license, the establishment of a methology to recover a charge in respect of damage caused to environment from the operations of such an industry.

III. Use only the laboratory test reports of the labs registered with both Sri Lanka Accreditation Board and the Central Environmental Authority when the license is renewed and take necessary action to amend the laws as appropriate.

3.4. The impact of the export processing zones situated near the Kelani River

Two main export processing zones situated near the river has been subjected to audit examination relating to water pollution of the Kelani River. Observations thereon appear below.

3.4.1. Seethawake export processing zone

The Seethawaka export processing zone operates under the Board of Investment of Sri Lanka has been commenced in the year 1999 and its land area is about 431 acre in extent. This zone operates 37 industries comprising garments, food and plastic etc giving value addition to the national economy. The Seethawaka Export zone has taken the environmental protection license up to 30 December 2010 in terms of section 23 (b) of the Environmental Act No. 47 of 1980 (Annexe - 15). The following observations are made in this connection.

a) In the examination of environmental protection License (EPL) issued to 37 industries revealed that the fulfillment of requirements in obtaining license was not at a satisfactory level as detailed below (Annexe - 15).

I.	Industries with a license as at the date of Audit	-	17
II.	Industries to which licenses are not issued	-	01
III.	Industries, the validity period of which is lapsed	-	12
IV.	New industries	-	02
V.	Industries considered for EPL	-	01
VI.	Industries not come under BOI	-	02
VII.	Industries temporary closed	-	01
VIII.	Cottage industries not required EPL	-	01
	Total	-	37

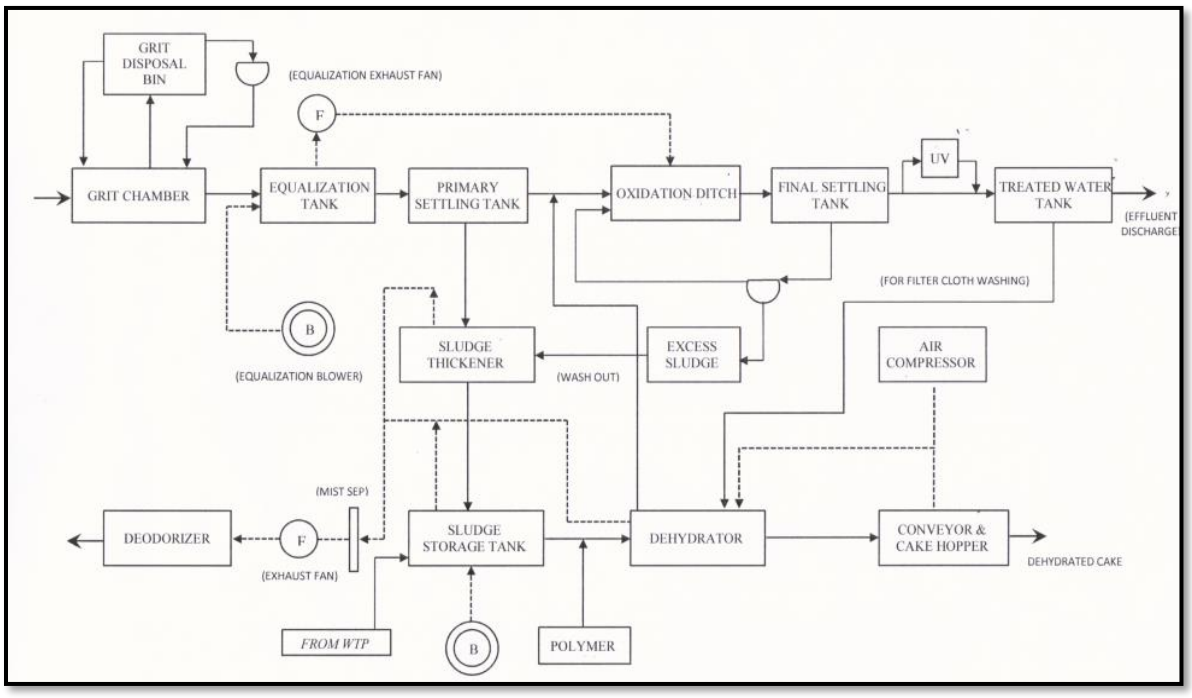
b) Even though the environmental protection license was obtained up to 30 December 2010, it had not been renewed by the Central Environmental Authority for the period of 08 years up to 2018 as non – fulfillment of the following requirements.

I. The machine which destroys microbe through ultra – violet rays, connected with the common waste water purification system has become dormant.

II. Innocuous solid waste in orderly disposed of in an open yard within the investment zone.

c) 15 out of 37 industries situated in the zone generates waste water and the waste water generates by those factories is purified by the purification centre located inside the factory and refers to the common purification Centre. The final refinery process is carried by the Water Supply and Drainage Board and discharged to the Kelani River through yaha canal.

Picture No - 01



Process of the common waste water treatment plant of the seethawaka EPZ

Waste water purification Centre – Seethawaka export processing zone (Annexe - 16)

The following observations are made in this connection

I. The water purification capacity of this Centre built in the year 1999 is 9,950 m^3 and about 20 years has elapsed after being constructed this centre (Annexe - 17). In the examination of information available in respect of purified waste water in this common purification centre observed that waste water was purified exceeding the monthly maximum capacity, ranging from 14,176 m^3 to 28,102 m^3 during the period January 2018 to 23 June. Particulars of quantity of water purified exceeding the maximum capacity appear below.

Month	**quantity of water purified in excess of the maximum quantity (m^3)**
January	19,535
February	14,176
March	25,461
April	22,570
May	28,102
June	25,908

Table No :- 02

Audit test check observed in this process that as a result of issuing waste water to the waste water purification plant exceeding the capacity of common purification system, there were occasions where waste water was discharged to the interior water sources of the country without being properly purified.

II. Action has not been taken to modify or increase the capacity of the common waste water treatment system up to the date of audit.

III. A plant operates with the help of ultra – violet rays has been installed for the destruction of microbes exist in sewage in the common waste water treatment process (Annexe - 18). This UV disinfiction plant uses for the destruction of microbes exist in the common waste water treatment center has been inoperative for a period of about 10 years. Consequently, in discharging waste water after being purified, the test reports established that sewage Bactria (Coliform) contains in excess of the tolerance limits. Water condition as per monthly analytical reports is as follows.

Date	Parameters	Limit needs to be existed as per the gazette notification No. 1534/18 of 01.02.2008	Value existed as per test reports (ml)	Excess from standard level
May 2018	E - Coli	Deciliter 40 (ml 4000)	19,000	15,000
June 2018	E – Coli	Deciliter 40 (ml 4000)	18,000	14,000

Table No - 03

IV. In certain occasions, the generation of waste water in the inhouse treatment plants exist in certain industries established in the waste water purification Centre generate waste water was increased more than the existing plant capacity that actually generates waste water. However, in comparison with this increase, the capacity of the inhouse treatment plants available in factories has not been increased and the capacity of the common waste water treatment plant has not been increased simultaneously and as such unpurified water and not purified water up to the specific standards was discharged to the retention pond through the common treatment center.

Picture No. 02

d) Quality of the water in the retention pond located in this zone cannot be satisfied. It was observed that at the end, its water mixed up with Kelani river through the Yaha oya. Observations in this regard appear below.

I. The physical verification observed that the capacity to be purified by the common waste water treatment unit is exceeded now and the excess water is not properly purified when the capacity of waste water, generated by factories is exceeded the capacity of inhouse treatment plant, and there is a risk of mixing the waste water with the retention pond by over following the equalization tank in rainy days.

II. According to the letter No. M/SEPZ/W 01 dated 26 June 2018 of the operations and maintenance Manager of the National Water Supply and Damage Board, it was stated that the surplus waste water, without doing any treatment, was disposal of directly to the retention pond (Annexe – 17)

III. Action has not been taken in accordance with sections 23 (G) and section 23 (N) (I) of part IV (B) of the Environmental Act and it was observed that in rainy season, this waste water washes and adds to the Kelani River through canals and as a result, the river water is polluted (Annexe - 01).

e) Waste water generated from the production process of 15 factories situated in the Seethawaka export processing zone is subject to purification process at the common waste water treatment plant after being purified by the in houses treatment plants located within the factories and the remaining sludge is deposited in a place, 65 meters in length, 20 meters in width and 4.5 meters in height put up by laying a clay layer to the bottom. It was revealed that about 15 tractor loads of sludge are disposed of daily to this place (Annexe - 19).

Picture No. 03

Disposal of sludge of the Seethawaka export processing zone

As a security coverage is not in existence in a manner covering the soil layer round the wall from the bottom to the top of the open sump put up now for the disposal of sludge through the common waste water treatment system when the sump fills up with sludge, rain water is mixed up and absorbed waste into the earth, resulting a risk of water sources being polluted. The physical verification observed that this waste improperly was disposed of to an elevated open yard within the export processing zone before and there is a possibility that water sources may be polluted by mixing that waste with rain water as well.

f) Solid waste generates within the zone improperly disposed of to the open land situated within the investment zone. A lot of solid waste, consists of textile pieces, Yoghurt cups, rubber pieces polythine and other solid waste had been improperly disposal of to this land.

Picture No. 04

Solid waste disposal yard in the Seethawaka export processing zone

Accordingly, all hazardous and innocuous solid waste is discharged to an open land without being classified and as a result, it was observed that this waste is mixed up with rain water in rainy days and adds up to the Kelani River causing adverse effect on the quality of water.

Waste generates in the production process of a private factory was stacked in an open place near the Kelani River.

Picture No. 05

The manner a private factory has stacked waste generates of its production process.

The following observations are made in this connection.

I. The physical verification carried out in audit observed in this connections that waste generates in the production process of this factory has been stacked in an open place near the Kelani river. Especially in rainy season it was observed that this waste may flow down to the Kelani river being mixed up with rain water.

II. In terms of the letter No. M/SEPZ/W – 08 dated 31 May 2018 of the National Water Supply and Damage Board, it was stated that as the waste is discharged improperly as stated above, the limit of electric conductivity of the water intake where water is obtained for the requirement of the Seethawaka zone is now at the limit of 105 µs/ cm although it needs to be existed at 60 µs/ cm limit. It is therefore observed that the standard parameters were exceeded by 45 µs/ cm.

g) A solid waste separation Centre has been put up by incurring a sum of Rs. 2.9 million for the purpose of separating innocuous solid waste (Annexe - 20)

Even though this centre was put up it was observed that it has not been utilized for the above purpose even up to the date of audit on 13 July 2018.

Picture No. 06

Solid waste separation center of the Seethawaka export processing zone.

3.4.2. Biyagama export processing zone

The Biyagama export processing zone operates under the Board of Investment of Sri lanka and commenced since the year 1985 and its area is about 450 acres in extent Sixty industries comprising garments, foods and plastic products etc. provide a value addition to the national economy (Annexe - 21). Audit examination carried out in respect of waste water purification process in this zone, observed the following.

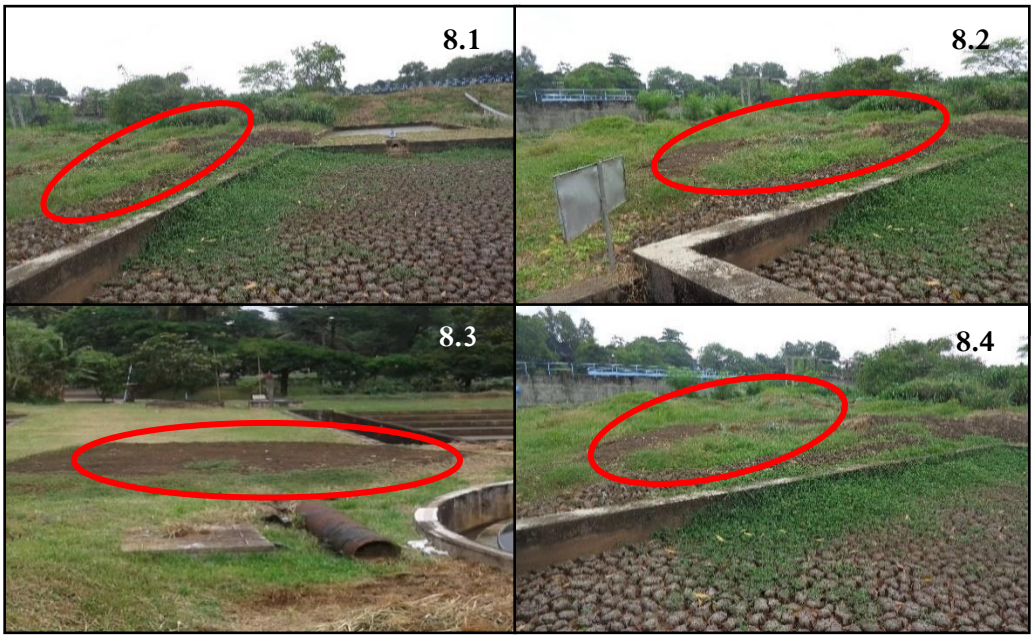
a) Waste water purifies in the Biyagama export processing zone, is issued to a retention pond situated near the Waste Water centre. Finally, the normal process is that this water flows through the retention ponds and foregatheres to the Kelani River through the "Menikagara" canal. Accordingly solid waste of one factory situated in the Biyagama zone subjected to audit disposed of improperly to a place near the retention pond. It was therefore observed that there was a possibility of adding pollutants to the purified water directly and finally it badly effects water of the Kelani River.

Picture No. 07

Solid waste disposed of by a factory in the Biyagama export processing zone.

b) Sludge generates through the common waste water treatment system of this zone spread over the land nearby improperly. A method to dispose or deposit this sludge in some other place is not in operation Sludge and sludge named as hazardous waste disposed of by in house waste water treatment units were stacked in an open land. Accordingly, it was observed that spreading sludge unproductively in a land is not an ecofriendly affair.

Picture No. 08



The manner how the sludge generated from the common waste water treatment system is disposed of by the Biyagama export processing zone.

Picture No. 09

The manner how the sludge generates from a factory in the Biyagama export processing zone is deposited in an open yard

c) In testing the water samples obtained from two selected places in the Biyagama export processing zone at the Ambathale Laboratory of the National Water Supply and Damage Board observed that the total content of T-coli contains in the test sample obtained from the rain water disposal place is exceeded by 890,000 than that of the standards capacity of 10,000 and the total contents of T-coli contains in the purified waste water exists at Retention pond is also exceeded by 100,000 than that of the standard tolerance limit. Furthermore, it was observed that the E-coli contents included in the rain water, discharges from the export processing zone exceeded by 546,000 than that of the tolerance limit of 4000 and E-coli contents in the retention pond where purified waste water is retained exceeded by 106,000 than of the tolerance limit.

Recommendations

I. Strengthen the pre - purification methodology for discharging purified waste water finally in to the water sources and be subjected to sufficient supervision.

II. To become active condition of the microbes distraction plant through ultra – violet rays connected with the common waste – water treatment system exists in the Biyagama Export processing zone or follow an alternative method and taking action to get the Environmental Protection License renewed expeditiously being formalized the solid waste disposal system. (3.4.1 (b)

III. Expedite to obtain the environmental protection license for industries, the validity period of which was lapsed and continue the supervisory functions. (3.4.1 (b)

IV. Expedite the review of capacity of the common waste water treatment center situated in the Seethawaka Export Processing Zone and expedite further improvement required (3.4.1 c - i)

V. Encourage the industrialists to recycle waste water disposed of by factories and reuse for the operations of the factory (Waste water reuse concept) (3.4.1 (c) – iii)

VI. Instruct to maintain the capacity of in house waste water purification center in conformity with the capacity of waste water generates by factories. (3.4.1 (c) – iii)

VII. Standard of water in the place at which purified water in the Seethawaka common waste water treatment center is added to the yaha canal from the retention pond needs to be continuously tested and taking action to rectify excesses of identified tolerance limits and ensure the continues follow up action (3.4.1. d)

VIII. Establish a formal methodology to dispose of sludge safely in the export processing zones (3.4.1. (e)

IX. Establish a methodology to separate and dispose of hazardous and innocuous solid waste safely in every industry and do follow – up action by the BOI (3.4.1 (f)

3.5. Adverse impact on Kelani River water and the environment by Settlements and other industries associated with Kelani River.

In ascertaining information form observation tours in respect of pollutants relating to Kelani river pollution, it was observed that six major bridges were constructed within an area of about 5 Km from Modara to Ambatahle. Accordingly, with the construction of highways including a systematic bridges system across the Kelani River connected by river banks with two district of Colombo and Gampaha and also connected with other division and main cities, it could be able to make a great contribution to the national economy.

Particulars of those bridges include,

- Kadirana Bridge and river month (Mattakkuliya)
- Jerman Bridge – Victoria Bridge
- New Bridge
- Black Bridge (Rail track)
- Kelanimulla Bridge
- Kolonnawa (oil) Bridge

Encroachments and unauthorized constructions in the two banks of the river improves the opportunities of being polluted the Kelani River. Observations in this regard appear below.

3.5.1. Encroachments and substandard constructions.

a) In terms of paragraph 2.5 of the circular No. 8/2014 dated 01 December 2014 of the Department of Irrigation, a construction is to be done after the allocation of 198 meters away from the river bank and in places more than the width of 15 meters of the river. In contrary to that, audit observed uncoutable number of permenant and temporary constructions, exist near the river bank and a few photographs obtained from various places are presented below (Annexe - 11)

Picture No. 10

b) The wall of the Kohilawatte cemetery situated in the South bank of the down river was collapsed towards the river. A risk of gathering dead bodies and polythene coverage to the river was observed.

Picture No. 11

c) In flowing the Raggahawatta canal exists in the left bank of the middle of the river up to the mouth of the Kelani River, it had become dirty condition due to disposal of pollutants by construction works done both sides of the river and the encroachment both sides have disrupted in flowing the canal.

d) A lot of buildings were constructed in the river bank near the two turning points with the letter "Z" shape at Rakshagala area situated in the south bank of upper river and it was observed that this affects the river pollution.

Picture No. 12

e) It was observed that constructions of grand scale businesses are in progress on the river bank near the kaduwela Bridge causing a lot of damages to the river bank.

Picture No. 13

f) A large scale earth washing locate recognized as an industry with very high Environmental risk belongs to “A” grade, according to the classification of the Central Environmental Authority, is situated near the Hettige canal flows down near the wele junction. Adding up waste to the Hettige canal flows near that industry and also observed that lands near the Hettige canal are reclamated.

Picture No. 14

g) A few tourist hotels constructed in Yatiyantota and Kithulgala areas (more than 20 rooms and less than 20 rooms) are subjected to check and found that there were encroachments in certain places of river bank. But, a reservation between the river edge and the construction sites could not be seen.

Picture No. 15

h) Even though a period of 18 years elapsed since the opening of a hotel near the river at Kithulgala area, the environmental protection license had not been obtained. It was observed that sewage and other solid waste of the hotel is mixed up with river water through the canal. Furthermore, even though septic tanks were built within the river limit, they were not subjected to check to ensure the correctness of their operations by responsible parties.

Picture No. 16

3.5.2. Disposal of solid waste improperly

a) In this observation tour, disposal of solid waste to the river in a massive scale in the areas of Modara, Mattakkuliya, Wellampitiya, Peliyagoda, Kolonnawa and Angoda can been seen. Plastic, empty bottles, polythene, papers and all demolished parts of buildings have been disposed of to the river. It was further observed at the river bank tour that all rubbish discharged by encroached houses at Mattakkuliya, Modara, Wattala, Wellampitiya, Peliyagoda and Grandpass areas is accumulated to the river water as depicted in the following pictures.

Picture No. 17

b) It was observed that purified waste water disposed of by factories in Biyagama export processing zone adds up to the Kelani River through the Rakghawatte canal.

Picture No. 18

c) The pattiwila canal beings and flows near the Ceylon Petroleum Corporation and factories and houses are built both sides of the canal. It was observed that all pollutants disposed of by those factories flow down through this canal. Water in this canal has become discolored and impured as observed at several audit visits. Similarly, it was observed that this canal joints with the Kelani river in a place nearest to the intake which supplies water to the Pattivila water purifier.

Picture No. 19

d) Even though action has been taken to remove impured water by using 3 main pipe lines along with the highway near the Pattiwila pump house, this water again dischrages to the Kelani River down and near the pump house.

Picture No. 20

e) It was observed that toilet impurities used and removed by the families live near the Batakiththa canal and tourist hotels constructed in Yatiyantota and Kithulgala areas add up to the Kelani River.

Picture No. 21

f) It was observed that waste water of a vehicle service station operates near the Kithulgala area and associated with the river and the waste water of 07 vehicles service stations operated in the areas from Kaduwela to Kaluaggala released to the Kelani River without being purified. It was further observed that as the water uses for washing the body of vehicles in most service stations is not purified as per standards and sludge is not disposed of with eco – friendly and it directly effects the water pollution of the Kelani River. Attention in this regard was not paid by the responsible entities.

Picture No. 22

Release of waste water accumulated in a service stations to the river without being purified.

Picture No. 23

Disposal of water uses for washing vehicles bodies without being purified.

Picture No. 24

Sludge discharged unproductively in an open yard

Picture No. 25

The manner constructed the waste water collection locate of a service station in an open yard.

g) Toilets of a famous hotel situated in Kithulgala area, associated with the river are constructed very close to the river and it appeared that there was a leak in the waste water soakage tank. This soakage tank is situated very close to the Kelani River as well as the kitchen with a severe smell. Even though the officers of the Provincial Environmental Authority instructed not to use those toilets, it was observed even up to the date of audit that they were being using.

Picture No. 26

h) Remaining waste in the production process and production scraps of the plastic manufacturing factory situated near the pattivila canal have been Discharged improperly to the factory promises and the pattiwila paddy field.

This waste improperly disposes may add up to the Pattiwila canal and the water so impared joints with the Kelani river through the Pattiwila canal. As the Pattiwila pump house is located nearby, it was observed that this may effect the water obtains for purification.

Picture No. 27

i) In the affairs of the phase II of the Kelani River south bank water scheme, a chemical contains calcium oxide, cement chemical, gypsum and hecsavelent chromium mixes up with water is used for the pulverization of a huge rock and this water, contains with chemicals is emitted to the Pattiwila paddy field by pipe lines without being properly purified. In rainy season, it was observed that there may be room for adding up these chemicals mixed up with water to the Kelani River via Pattiwila chanal.

Picture No. 28

j) The borders of the cemetery situated in the boundary of the Kelani River at Hanwella area in the mid left bank of the river was washed and as such, it was observed that there is a risk of adding up waste in to the Kelani River.

Picture No. 29

Hanwella cemetery

k) It was observed that waste water disposes by a yoghurt factory in Kaduwela Town is directly discharged to the Kelani River, without being purified.

Picture No. 30

l) The owner of a textiles dyeing factory in Kaduwela Town has failed to ensure that sludge disposes of the waste water purification system of the factory is emitted by an appropriate methodology.

3.5.3. Impact on the aesthetic Locates

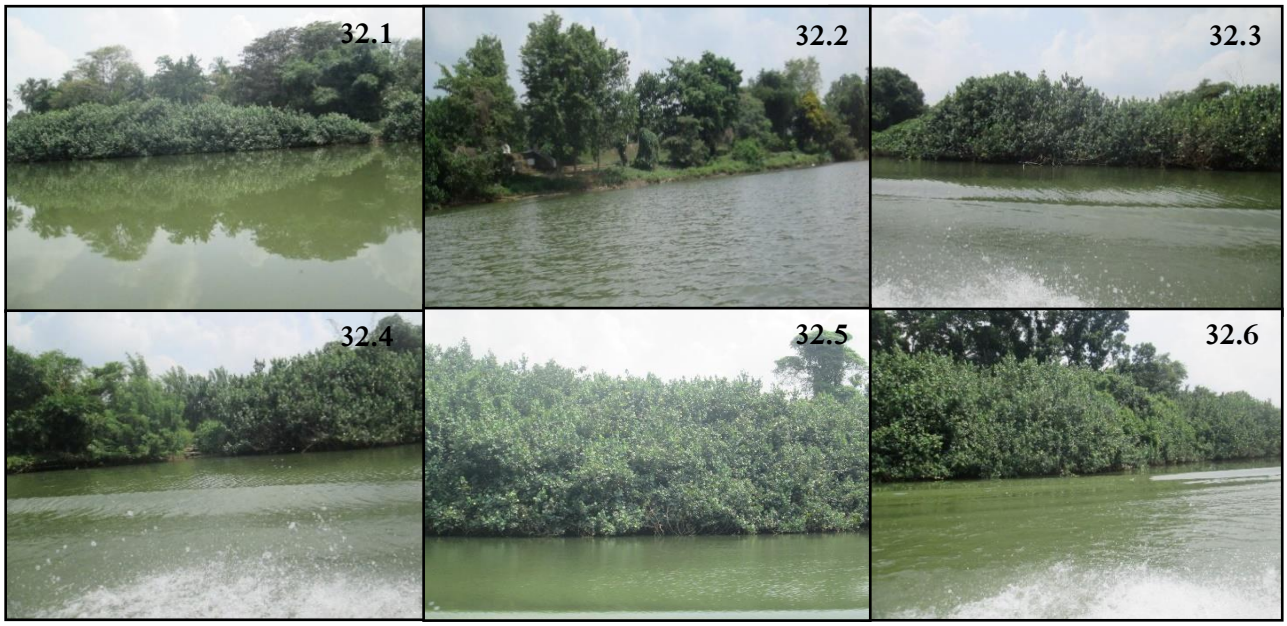
a) Construction of hotels, factories and other constructions or cultivations existed in the locates of river boundary with aesthetic attraction was observed. of them, it was observed that space is not separated in the constructions of peliyagoda and Angoda areas for river reservation.

A few pictures in this connection are shown below.

Picture No. 31

b) An attractive area covered with mangrove is seen both sides of the river between peliyagoda and Angoda the scenery is magnificent. Mangrove vegetation is a great resource to protect river banks, river water and aquatic organism as well as the eco–ornamentation. Even though the significant of protection of eco – system is ensured thereon, it was observed that further attention is to be drawn to protect those magnificent areas.

Picture No. 32



3.5.4. Destruction of river Bank and mixing up saliferous water with river water

The following observations are made in this connection

a) Ample environmental destruction in the areas from Modara to Ambathale can be seen and it was observed that unsympathetic actions of the main himself cause this environmental destruction. Disposal of garbage without proper management, washing out the river bank, unauthorized constructions in the river boarder and disposal of sewage effected this environmental destruction. Pictures taken in this regard appear below.

Picture No. 33

b) Even though it was observed that temporary precautions have been taken to prevent mixing of sea water near the Ambathale pump house to the Kelani River which is the main drinking water source of western province, the requirement of paying further attention in this regard is also observed.

Picture No. 34

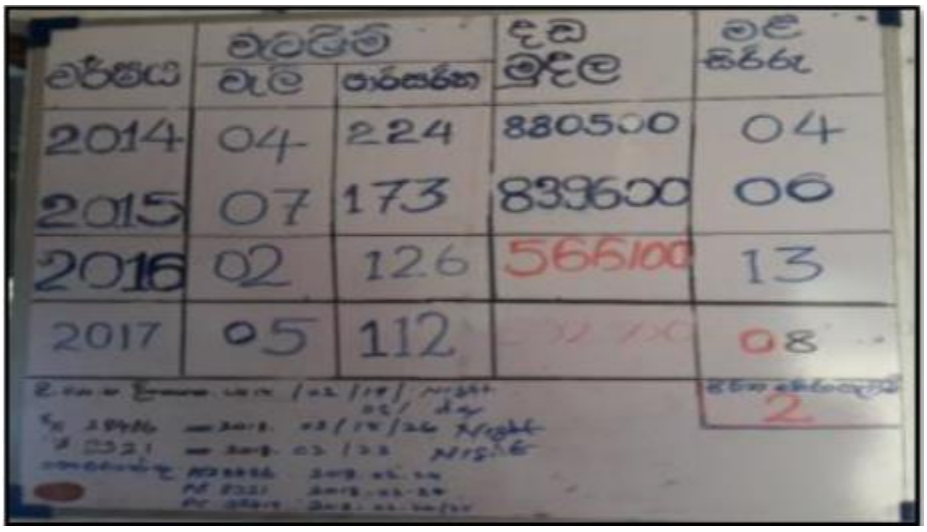
The manner sand – bags is spread for the prevention of mixing saliferous sea water with drinking water at the locate where water is obtained for the Ambathale pump house.

3.5.5. Intervention of few responsible entities in respect of Kelani River pollution.

The following observations are made in this connection.

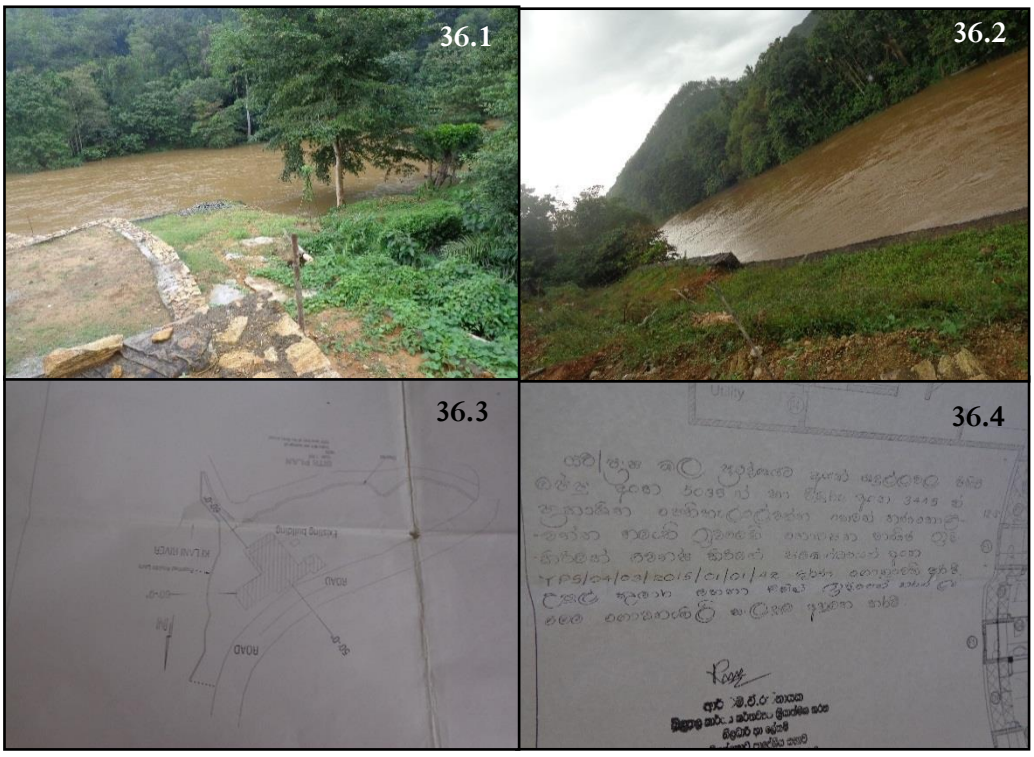
a) According to the information on raids carried and by the Peliyagoda Police Station during the past 4 years, connected with Kelani River, an increase of unauthorized sand dredging was observed in the year 2017 as compared with that of the year 2016. However, it was observed that the Peliyagoda Police Station has made an extensive contribution in respect of the protection of river Bank.

Picture No. 35



b) In the opening of small-scale hotels, an Environmental Protection License of “C” grade is issued by the Local Authorities. When there are more rooms in the modification and strengthening the hotels, It has been referred for the approval of the Central Environmental Authority. Accordingly, The granting authority for such constructions within the river reservation is observed as a serious issue.

Picture No. 36



Area of Kithulgala

Recommendation

I. Protect river bank (3.5.1)

II. Stop further encroachments (3.5.1)

III. Regular checking of encroachments by Local Authorities happen within their jurisdiction and keep understanding with the Ministry of Local Government in order to take legal action, theron. (3.5.1)

IV. Devolve the responsibility to minimize the environmental damage causes in the modification of existing buildings and construction of new buildings associated with the river (3.5.1)

V. Supervise soaking tanks and septic tanks constructed in hotels and prevent in accumulating sewage to the river. (3.5.2 (g)), (3.5.1 (h))

VI. Expedite taking necessary action to prevent the disposal of remaining solid waste to canals connected with Kelani River (3.5.1 (h))

VII. Make obligatory to get the environmental recommendations of the Central Environmental Authority in issuing environmental licenses for "C" grade industries by Local Authorities (3.5.1), (3.5.5)

VIII. Prevent improper disposal of solid waste and make aware of the general public continuously about the locations of the river subject to be polluted (3.5.2)

IX. Make aware of the general public about the adverse effect on them by bathing and drinking the water after being accumulated waste and sewage to the river (3.5.2)

X. Expedite the implementation of proposed projects to prevent in reaching the Pattivila canal to the Kelani River nearest to the drinking water sources (3.5.2) (b)

XI. Instruct to obtain laboratory reports continuously relating to the waste water disposed of by tourist hotels and supervise the process (3.5.2 (e)

XII. Conservation of being identified environmentally excellent localities related to Kelani River (3.5.3)

XIII. Test long team solutions to minimize the risk of mixing up saliferous water with drinking water and take appropriate action accordingly (3.5.4)

3.6. Importance of water quality and water pollution recognition criteria

3.6.1. Water quality

Water quality means the ability to achieve the usefulness objectives being used water for physical, chemical and biological qualities contain in water. Water quality is classified under 03 parameters as physical, chemical and biological. Accordingly, physical quality contains temperature, colour, taste, odour, turbidity, total solid, total suspended solid, total dissolved solid. Under the chemical quality, it contains dissolved Oxygen, bio chemical oxygen demand, chemical oxygen demand, PH value, hardness and electrical conductivity. Under the biological quality, the total coliform content is considered. (Annexe - 24)

3.6.2. Importance and identification of water pollution criteria

a) Under Section 23 G (Annexe - 01) of the Central Environmental. Authority Act, No. 47 of 1980, restriction regulation and control of pollution of the inland water is clarified. Accordingly, subject to section 23 B of this Act, with effect from the relevant date, no person shall deposit or emit waste into the inland waters of Sri Lanka, except in accordance with such standards or criteria as may be prescribed under this Act. Even though 36 standards (Annexe - 25) to ensure the purity of water are identified since 2017, reports have been issued after being measured water qualities by using only 14 parameters from 2013 to 2015 and 24 parameters since 2016.

b) The Central Environmental Authority and the Government of Netherland had initiated to established ambient water quality standards in the years 1992 and 2000 and in terms of the Board Paper No.361/3677/16 dated 01 August 2016, Ambient water quality standards were established (Annexe - 25). Even though ambient water quality standards have been established, they have not been published by a government gazette notification.

c) Ambient water quality standards not published by a gazette notification of the Central Environmental Authority but approved by the Board of Directors have been utilized for testing the quality of Kelani River water which covers under the definition of inland waters. Water samples obtained from 12 locates of the Kelani River from 2013 to 2015

and 17 locates since 2015 were subjected to test. In this test, water standards were introduced under 06 categories as shown below (Annexe - 26)

• Category 'A'	Water suitable for drinking only after minor purification.
• Category 'B'	Water suitable for bathing and entertainment functions.
• Category 'C'	Water suitable for aquatic organisms
• Category 'D'	Water suitable for drinking after full purification process.
• Category 'E'	Water suitable for Agricultural and irrigation work.
• Category 'F'	Minimum water quality needs to be existed, except for categories from 'A' to 'E'.

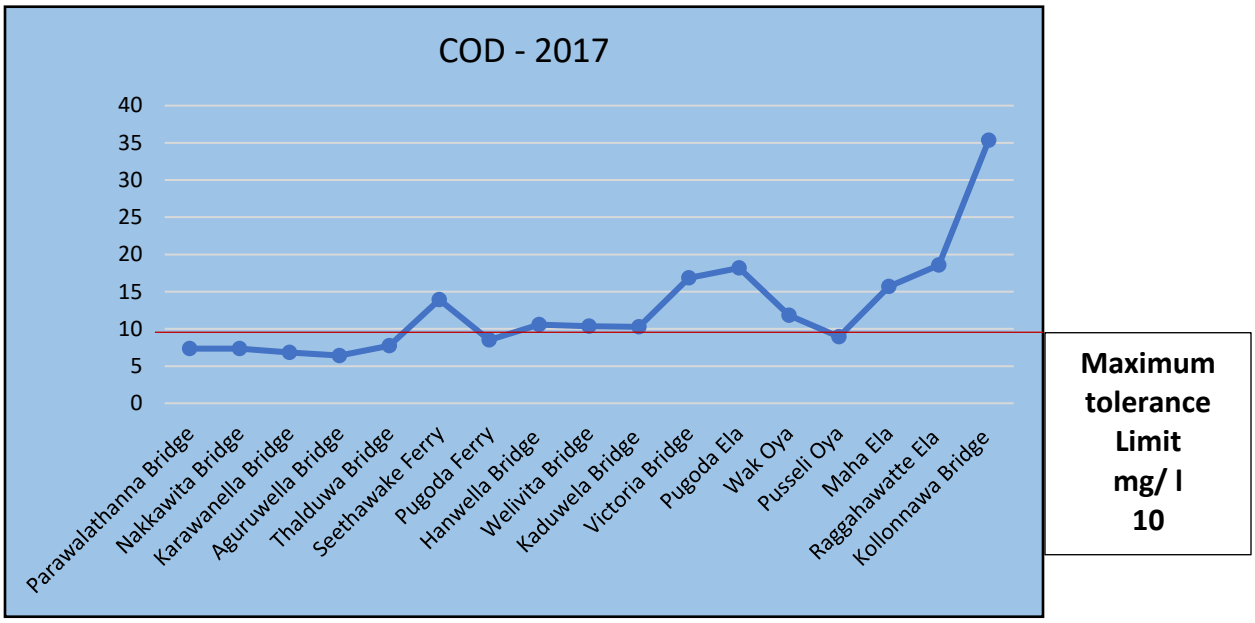
3.6.3. Identification of water pollution criteria

a) Chemical oxygen Demand – (COD)

The quantity of oxygen requires to decompose carbonic substance contains in water by using a potent oxidant is denoted as Chemical Oxygen Demand (COD). If the COD takes a high value, it means, it contains a very high quantity of carbonic substance which can be oxidized. This reduces the quantity of dissolved oxygen. This is harmful to microorganism. According to the ambient water quality standard, the COD in water needs to be maximum of 10 mg per Liter (10mg/l)

Accordinging, to the Laboratory test reports in the year 2017, tolerance limit of COD has exceeded at Kaduwela Bridge, Pugoda ela, Maha ela, Raggahawatte ela, Parawala Thenna Bridge, Karawanella Bridge and Angunuwella Bridge as per the water tests carried out. It was at a range between 11 mg to 35 mg per Leter. The highst place where COD has exceeded the tolerance Limit was recorded at Kolonnawa Bridge and it has exceeded by 25 mg per Liter (25 mg/l). The efficiency of the waste water treatment centers can be tested by this parameter. As this parameter had exceeded the tolerance Limit from Seethawaka, Kaduwela Bridge to Kolonnawa Bridge, it was observed that substandard waste water is added to the Kelani river.

Picture No – 41



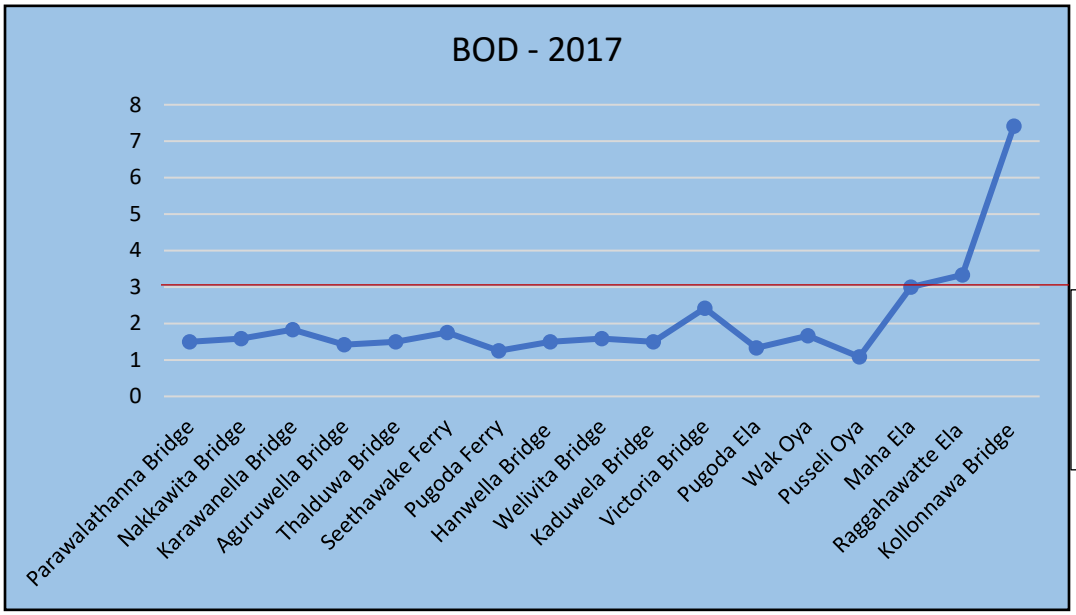
b) Biological Oxygen Demand (BOD)

Biological Oxygen Demand means the quantity of Oxygen requires to microorganism to decompose the quantity of carbon substance contains in water. When increasing the quantity of Carbonic pollutants in the water, decomposed micro organism uses largely dissolved oxygen in the water to decompose such substance. It is therefore, BOD in the water contains carbonic substance in plenty takes a high value. When increasing BOD, the quantity of dissolved oxygen in water decreases. This position interrupts the metabolism process of micro organism and damages to biodiversity (Annexe - 24)

According, to the ambient water quality standards, BOD at 20 degrees centigrade within 05 days should be at the maximum level of 03 and 04 mg per liter. (Annexe - 25)

Biological Oxygen Demand in the water samples obtained near the Kolonnawa Bridge in the year 2017 had increased the tolerance Limit by 4 mg per liter.

Picture No – 42



c) Dissolved Oxygen (DO)

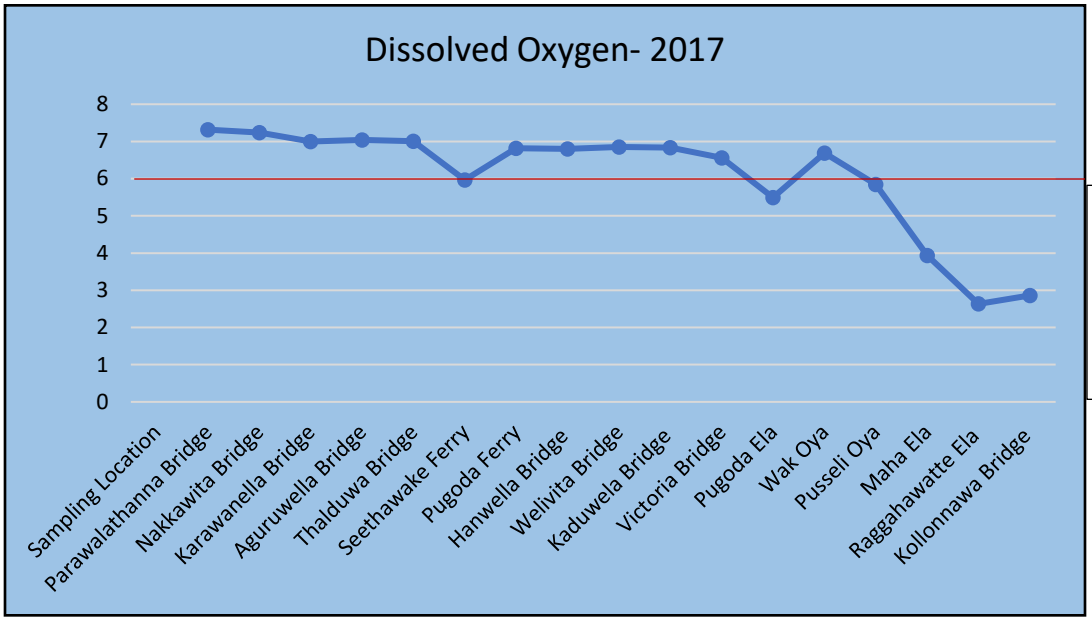
Many gases dissolve in the water and oxygen takes a foremost place there of "DO" means the quantity of Oxygen dissolved in the water. Micro organism uses this Oxygen so dissolved for their respiration. Non – maintenance of the minimum quantity of Oxygen contains in the water may badly affect the micro organism (Annexe - 24)

When Oxygen is declined, it adversely affects the swiming ability of fish. Being exposed of "DO" quantity less than 01 mg per liter of water for few hours, may cause even death of fish. According, to the ambient water quality standard, a minimum of 06 mg to 05 mg needs to be contained in one liter of oxygen dissolved at 25 degrees centigrade (Annexe - 25)

Decrease of dissolved oxygen in water may cause adverse effect on the respiration of micro organism. Adding industrial waste to water may causes this position.

According to the laboratory test reports, it was observed at a test of water samples in the years 2016 and 2017 obtained from Pusseli Oya to Kolonnawa bridge, the quantity of dissolved oxygen in the water takes a minimum value of 05 to 02 mg per leter.

Picture No – 43

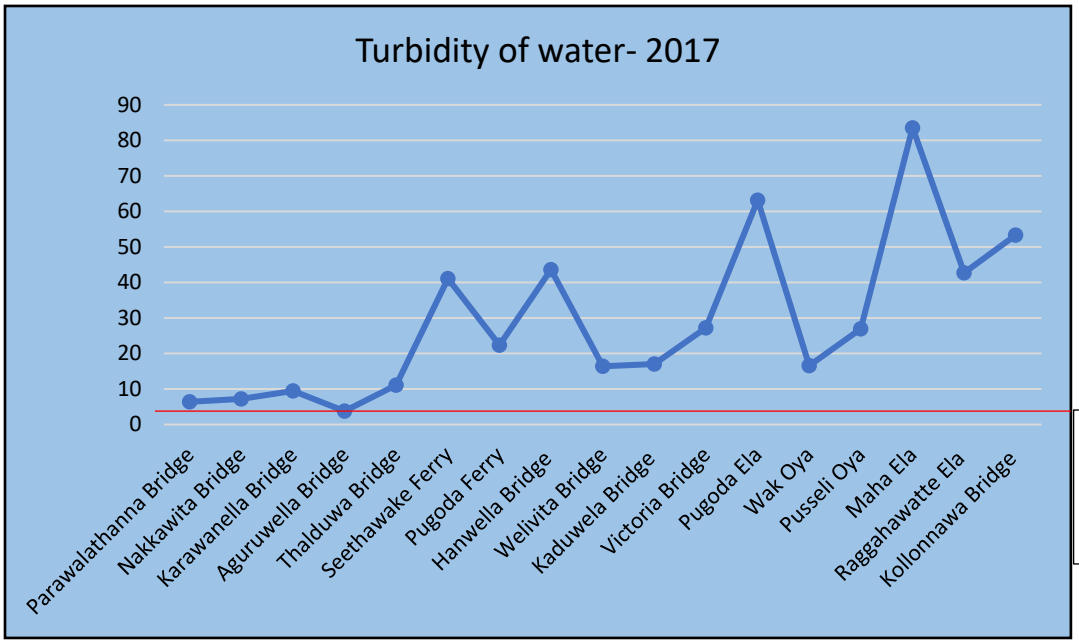


d) Turbidity of water

Turbidity of water denotes as water becomes indistinguishable due to very small particles, invisible to the marked eye being suspended in the water. Clay, Sludge, Micro carbonic substance, Algal layers and fertilizers use for cultivation are identified as particles contribute to become turbidity of water. Turbidity also arises by adding waste water, and stirring water by organism finds foods in association with the bottom of water sources. Soli erosion, dredging sands, gemming industry also cause water turbidity. As the Light goes in to the water to a smaller degree, photosynthesis of aquatic plants is decreased due to turbidity of water. As the heat absorbs by varied solid particles, the temperature of water is increased. Due to carbonic substance that creates turbidity, infestation of micro organisms is increased. There is a risk of being infected diseases when drinking turbidity water. Dissolved solid waste interrupts the respiration makes through gills of fish. As a result of adverse effects such as closing fish eggs, fish infestation may decrease (Annexe - 24)

According to the ambient water Standards, turbidity of water needs to be at the maximum level of 5 NTU (Annexe - 25). Turbidity of water in all places subjected to test during the period 2013 to 2017, it was observed that the tolerance limit took a very high value from 06 NTU to 83 NTU.

Picture No – 44



e) Total Coliform

The term 'total coliform' is demoted to introduce the group consists of all coliform bacteria species considered together. Coliform bacteria means species of bacteria Live in human facces, intestine of immobile animals, soil, plant slices and polluted water. Does coliform bacteria live in water, other pathogenic bacteria also lives connected therewith.

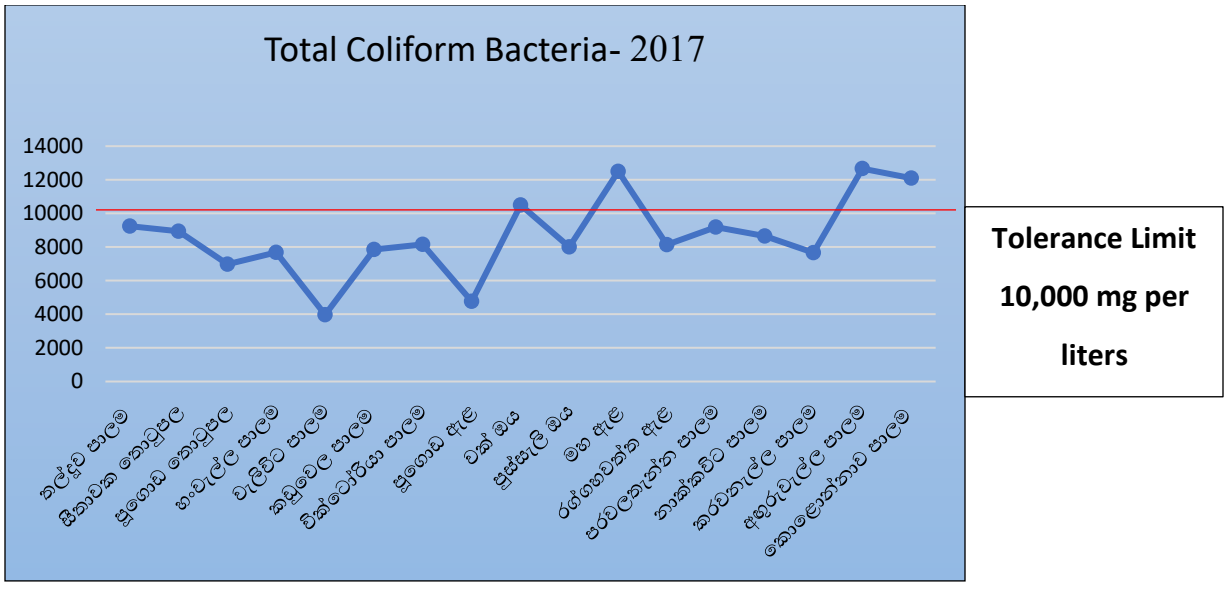
A few coliform Bactria species live in the intestine of the man and immobile animals and they discharge to the environment with fecal matters as well. The terms fecal coliform is used to demote this Bactria species. Existence of this bactria in water evidenced that this water is polluted by faccal matters. Facces of human beings and other animals with high temperate body fill with pathogenic that terribly damages the health of human beings. There is a risk of spreading this pathogenic by adding faccal

matters to the water. Faecal matters contain salmonella organisms, cholera, a adino virus, polio virus, eco – virus, amoeba, giardia, christopiridium and pathogenic micro organisms such as hook worm, round worm, pin worm etc. When mixing faecal matters of a deceased person, there may be a risk of existing pathogenic in the water' (Annexe - 24)

According to the ambient water quality standards, total coliform bactria per deciliter needs to be approximately a maximum level of 10000 (Annexe - 25)

According to the laboratory test report of the years 2016 and 217, the total coliform bactria level per liter in the water sample taken connected with Maha ela, Angnuruwella Bridge, Kollonnawa Bridge and wak oya in 2017 takes the value of 10,500 mg to 15,000 mg. When observed in the examination of test reports made by using water samples taken near the Kolonnawa Bridge, it was established in audit that all test reports had exceeded the relevant tolerance Limits.

Picture No – 45



f) In the examination of all parameters above, it was observed that water of Kelani river from Seethawaka ferry to Kolonnawa Bridge is not suitable for drinking, bathing or entertaining activities after a minor purification.

Recommendations

I. Take action to provide facilities for the use of all 36 criteria, in measuring water quality of Kelani river by the Central Environmental Authority.

II. Take action to incorporate ambient water quality standards.

III. Take necessary action to maintain at the tolerance Limit of chemical oxygen demand within the area from Seethawaka ferry, Kaduwela bridge to Kolonnawa bridge.

IV. Identify and take necessary action for causes about non – existence of biological oxygen quantity within the tolerance Limit in the water from Maha ela to Kolonnawa bridge.

V. Identify and take necessary action for reasons about non – existence of dissolved oxygen quantity within the tolerance Limit in the water from Wak oya to Kolonnawa bridge.

VI. Identify the reasons for water pollution in the areas of Maha ela, Angunuwella bridge and near the Kolonnawa bridge and take necessary action to prevent it.

VII. Well – timed amend the National Environmental Act No. 47 of 1980. Which includes,

- Inclusions of criteria on the quantity of waste water discharges by each factory, when issuing Environmental License by the Central Environmental Authority for the protection of the quality of potable water.
- Establishment of a methodology to exchange updated data on potable water quality between the Central Environmental Authority, Water Resource Board and the Water Supply and Drainage Board.
- Employment of a sufficient staff in order to regularize the methodology in renewing Environmental protection license.

3.7. Supply of potable water

Potable water is a basic need of all mankind. Even though the basic water sources are wells in rural areas, rivers, streams and huge reservoirs, tanks are used as urban water supply sources. Excrements, success and other carbonic and non – carbonic waste are accumulated to those water sources, resulting a risk of entering detrimental. Pathogenic microorganism to the water sources. When this impure water is drunk, it may cause deceased condition connected with alimentary canal. Therefore, filthy water needs to be distribution among people only after being purified in compliance with parameters in Sri Lanka Standard 614 (SLS 614). Two main potable water purification centers have been installed related with Kelani River, namely Ambathale water purification center and Pattivila water purification center. They provide 80 per cent of the drinking water requirement of the Western Province population. Potable water is purified by sedimentation, filtering and chlorination Particulars are as followers.

3.7.1. Ambathale and Pattiwila Reservoirs

When considering the expenditure incurred on chemicals use for the purification of water of the two reservoirs during the past 05 years, it has increased. It was observed that the reason for the use of more chemicals is that the increase of water pollution. Accordingly, the total purification cost of the Ambathale reservoir amounting to Rs. 879 million in the year 2015 had increased to Rs. 929 million in the year 2017 and the quantity of chemicals use by the Pattiwila Reservoir have increased by 17 per cent of alum, 37 per cent of lime and 74 per cent of chlorine. Accordingly, it was observed that with the increasing trend of the use of chemicals during the past 05 years, Impurity of water also increases annually. The consequence of this is the increase of purification cost gradually and the production cost of potable water finally needs to bear the consumer.

Recommendation

I. Take action to increase the production capacity as targeted.

II. In order to mitigate and prevent the continuous increase of the quantity of chemicals use for water purification and water pollution, regular supervision needs to be done on the adherence of the conditions, stated in the environmental protection license of the factories situated near the water sources when the license is issued and renewed.

3.8. Various projects for the protection of Kelani River bank

3.8.1. Kelani River bank protection planes

The strategic and Action plan of the middle and long terms co-partners on the protection and management of Kelani River basin for the period 2016 to 2020 has been prepared by the International Union for the Conservation of Nature – (IUCN) in the year 2016. In the preparation of this plan, participation of 53 main partners had been obtained and a sum of Rs. 7,872 million had been estimated thereunder there with the objective of performing 05 main objects and 69 activities. Approximately a sum of Rs. 7.9 million has been spent only for the preparation of this plan (Annexe - 31). It was however observed that the strategic and Action plan of the middle and long terms co-partners on the protection and management of Kelani River basin 2016 – 2020 (IUCN) was not an active level even by the date of audit.

3.8.2. Kelani River Flood control programme

The estimated cost of 37 projects impartmened by the Department of Irrigation during the period 2015 to 2017 for the control of flood in the Kelani River amounted to Rs. 464,450,197 out of which a sum of Rs. 29,768,341 had been utilized up to 31 December 2017. Only 50 per cent and 24 per cent of the total estimated cost of projects had been utilized in the year 2015 and 2017 respectively. However, the construction works of Pethiyagoda pump house had not been commenced even by March 2018 as a result of legal issue on land acquisition.

3.8.3. Revival Environmental Conservation National programme

This programme commenced with the objective of the establishment of a sustainable Environment within Sri Lanka covers 6 basic fields and the estimated cost of this programme amounted to Rs. 22,775 million (Annexe - 33). Under this programme, it was expected to prepare and implement the strategic plan for the conservation and management of the Kelani River basin stated in the 3rd principal environmental problem and the responsibility of this programme rests with the Central Environmental Authority. The total expected cost estimate thereon from 2016 to 2018 amounted to Rs. 121 million. However, provisions under this project has not been utilized as at 31 December 2017.

3.8.4. Underground water resources development projects

The Water Resources Board, as an apex entity responsible for underground water resource development and management in Sri Lanka performs various long term, midterm and short term projects in respect of exploration of underground water, development, conservation and management of water resources. Being carried out hydro logical surveys as per welltimed requirement, necessary recommendations are made in respect of the creation of secured water capacities suitably obtain in conformity with each underground water resource and recommendations to minimize environmental issues arise related thereto the following disclosures are made in respect of projects performed by the Water Resources Board during the past 03 years.

a) A cost of Rs. 4.5 million had been estimated for the years 2015 and 2016 to a project to study the qualitative and quantitative changes happen in the underground water of Kelani River basin and the utilisation of that found as at 31 December 2017 amounted to Rs. 2.78 million (Annexe - 34)

b) An estimation system, consisting of 25 sample places in the Kelani River basin had been installed and water samples are tested 4 times per year therefrom. 10 of these 25 places are deep wells and the balance 15 are other wells. Only the upper basin of the Kelani River has been covered from these 25 sample places and the lower places were not covered and as such it is unable to make observations on the quality of under grand water in those places.

c) The damage affected to surface water caused to pollute to Kelani River by industrial waste water or other sources could not be identified how far it had affected to underground water.

Recommendations

I. Testing the underground water quality at the lower places of Kelani River basin.

II. Moderating and progress review of the utilization of estimated provision in order to achieve the programme targets.

3.9. Reaching sustainable development targets

According to the sustainable development target 06, obtain water and sanitation facilities for all and establishment of their sustainable management are basic and important targets in respect of environmental issues. (Annexe - 06)

3.9.1. Protection of water quality

It is intended by the year 2030 that raise the water quality being reduced water pollution, eliminate the disposal and discharge of dangerous toxic chemicals, reduce discharge of impure waste water, recycle water at a considerable level and reuse protectively. Accordingly, attention needs to be drawn on the quantity of waste water treatments protectively and the number of reservoirs with quality water.

3.9.2. Protection of Bio – systems

It is intended under this programme by the year 2020 that the protection of mountants, forests, wetlands, rivers, underground water, lakes including bio – systems related with water and recreation. Attention is drawn in respect of well - timed change of the extent of lands in water related environmental systems.

3.9.3. International Co – operation and capacity building

Intended objectives need to be fulfilled by, 2030 includes, collection of water, purification, efficient use of water, purification of waste water, recycling, technology for reuse, strengthening the international cooperation and capacities given to developing countries for programmers and activities related to water and sanitation facilities.

Attention in this connection is paid in respect of the extent of assistance for sector development related to water and sanitation as a part of the expenditure plan with state coordination.

3.9.4. Community participation

In the management of water and sanitation, it is intended to obtain the participation, encouragement and assistance of the regional community. Attention is drawn in respect of the number of Local Authority units with the policies established and implemented for the participation of regional community groups on water and sanitation management.

The observation is as follows.

The Department of Censure and Statistics has not presented basic data relating to sustainable development targets 6.3.1, 6.3.2, 6.6.1, 6.a.1 and 6.b.1. In addition, the preparadness for the determination of indices as an institutional level, in accordance with these substantiable targets were considerably not performed (Annexe - 35)

Recommendations

Attention on 03 main concepts is drawn for the control of Kelani River pollution as a mythology to obtain basic data relating to the achievement of sustainable development targets.

- Align (Central Environmental Authority, Local Authorities, industrialists, community an media)
- Implementation
- Concept of leave no one behind

3.10. Related Legal provisions

3.10.1. National Environmental Act

Attention was paid in respect of provisions in paragraphs 10 (i), 23 (a), 23 (b) and 23 (g) of the National Environmental Act. The following observations are made in this connection (Annexe - 01).

a) Even though a cabinet memorandum No. ඇමෙ/06/1346/221/024 dated 03 August 2006 was presented for the amendment of National Environmental Act No.47 of 1980, the Act has not been revised even up to 31 December 2018 (Annexe - 08)

b) As introduced by Sections of the Environmental Act, a method of the recovery of a fee based on volume and contents of pollutants is not covered by this. In the examination of all issues in a manner that pollutes Kelani River, observations made include discharge of untreated sewage or substandard industrial effluents, toxic chemicals into soil, canals or streams but the international of the Central Environmental Authority and Local Authorities on this issue was insufficient.

3.10.2. Legal requirements of the Environmental Act related to the quality of water ways.

a) The intention of the establishment of the Central Environmental Authority includes, protection of environment, management and enhancement, regulate the quality of environment, maintains, prevention and abatement and control of pollution and matters incidental there to. Under part iv B, regulations in respect of pollution of the inland waters are included. Section 23 B (1) includes a regulation that a prescribed fee needs to be paid on the contents of pollutants in the waste water when a license is issued (Annexe - 01)

b) Interns of paragraph 3.1.2.1 of page 15 of the annual report of the Central Environmental Authority for the year 2014 (Annexe - 36) compliance with water quality standards on disposal of waste water stated in the gazette notification bearing No. 1534/18 dated 01 February 2008. Action had not been taken accordingly even up to the date of Audit.

c) According to the gazette extra ordinary notification bearing No. 1894/3 dated 22 December 2014 which includes the national policy on the protection and conservation of water sources their catchment areas and reservations in Sri Lanka, it is suggested that it is appropriate to assign the overall responsibility of taking action on main rivers and their affluent to the Department of Irrigation. However, an active action plan thereon had not been prepared as observed in audit (Annexe - 05)

3.10.3. Environmental protection Areas

In terms of sections 24 (C) and 24 (D) of the National Environmental Act No. 47 of 1980 as amended by Act No. 53 of 2000 and 56 of 1988, the Minister in charge of the subject of environment may by order published in the gazette declare any area to be an environmental protection area which is causing damage or detriment to the environment areas require sereve conservation. Under this, 10 Criteria for the selection of suitable areas to be declared as environmentally protection areas are identified (Annexe - 01)

The following observations are made

An area with eco – system comprises of identical characteristics and 11 Geographical configurations, importance as natural beauty, hydraulically precious and area with tourist attraction etc. related to the Kelani River identified to be conservated by plans prepared by various institutions were observed in audit. Nevertheless, environmentally safety or environmentally sensitive areas related Kelani River had not been identified and published by a gazette notification up to the date of audit.

3.10.4. Tourism Act and others

a) Orders relating to sub – section 05 of section 48 of the Tourism Act No. 38 of 2005 have been published in the gazette extraordinary No. 1963/28 of 20 April 2016. Under section 02 of these orders, every registered owner takes the responsibility that the registered tourist hotels need to be complied with minimum standards applicable to all tourist hotels (stars 1 to 5) (Annexe - 10)

b) Every registered owner intends to be qualified as a tourist hotel with 1 to 5 stars under the order 10 and 11 needs to be satisfied the minimum qualifications specified in the schedule (II) and schedule (III)

c) Under sub – section 12 (3) of this order, a hotel belongs to star classes needs to be re – classified once in every 03 year.

d) Under the schedule IV of the gazette un-conditional orders for any star type hotels are stated and sanitation needs are stated under sub-section 10.

e) In terms of sub-section 17 of schedule IV of the gazette, matters on environment. People and dependable ability are mentioned. In terms of section 17 (I), the hotel needs to have a plant/ system to use medication for facial matters and waste water, maintains in a sates factory manner and with the approval of the central Environmental Authority.

f) Under section 17(6), an obvious method needs to be established for waste recycling and for the separation of solid waste for recycling.

The following observations are made

I. Stringent serve standards need to be imposed by establishing sanitation, cleanliness and health control in the hotel building and its surrounding areas. Nevertheless, it was observed that hotels subjected to audit were not complied with sanitation standards even though Kithulgala is a very famous tourist area.

II. In terms of gazette notification bearing No. 1550/9 dated 22 May 2008 on soil conservation, Yatiyantota area is a secured area but in the construction of hotels connected with river, this matter was not considered.

III. Kithulgala is the most beautiful area for white water rafting in South Asia but it was observed that standard was not in existence for the protection of Kelani River water resource uses for this purpose.

3.10.5. Provisions for the protection of River.

a) In the examination of the ownership of river observed that the bottom of the river belongs to the Divisional Secretariat and the Geological Survey and Mines Bureau, water of the river belongs to the National Water Supply and Damage Board, gems at the bottom belong to the Gems and Jewelry Authority and the river bank belongs to the Department of Irrigation but there was no proper coordination between them. Furthermore, it is observed that the river banks are being extensively eroded but sufficient steps had not been taken to protect them.

b) In the execution of powers wasted in the District offices of the Central Environmental Authority in respect of cleanliness of river water, it was observed that the assistance of the Public Health Inspectors has not been received sufficiently.

Recommendations

I. Introduce “Ravisher should pay” concept

II. Introduce a method of imposing fees/ fines on the contents of pollutants in the waste water

III. Obtain the intervention of the Central Environmental Authority and Local Authorities sufficiently.

IV. Amend the National Environmental Act well – timely.

V. Stablish methodologies to protect water sources, catchment areas and reservations

VI. Gazette revised water quality standards

VII. Take action to protect the river under legal framework by establishing environmental protection and environmental sensitive zones, associated with Kelani River.

VIII. Recognize areas belong to Tourist zone.

IX. Assign to the field officers the responsibility of establishing that sanitary requirements are followed in issuing environmental protection license for tourist hotels.

X. Review waste water and capacity of septic tanks of all tourist hotels.

XI. Name bath ferries for tourists and provision of common amenities therin (sanitation)

XII. Standardize tourist hotels

XIII. Strengthen the methodology of issuing environmental protection license as the issue of Tourist Hotel license and the excise license is determined, based on the validity of the environmental license.

XIV. Characteristics need to be existed in 03 stars, 04 stars and 05 stars hotels are specified in Tourist Hotels Act No. 38 of 2005. Even though sanitary facilities are emphasized there in, its practical application, apart from legal section needs to be considered.

XV. Encourage tourists to make their comments in log books when they leave the hotels. (In this context, a self control methodology can be established to control quality and standards of tourists hotels by taking comments through a computerized programmes and being Linked with the Department of Tourism)

XVI. Assign specific responsibilities to the Department of Irrigation, Central Environmental Authority National Water Supply and Draining Board, Tourist Board and Local Authorities on river protection.

4. Conclusion

Due to massive urbanization and industrialization associated with Kelani River, it is observed that water of the river is being promptly polluted. It is therefore concluded that the existing laws, rules and regulations are not sufficiently followed by responsible entities theron and the intervention and monitoring part to control the environmental damage causes there to is insufficient.