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LEAD

REGULATING EFFLUENTS FROM INDIA'S TEXTILE SECTOR: NEW COMMANDS
AND COMPLIANCE MONITORING FOR ZERO LIQUID DISCHARGE

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ARTICLE



VOLUME
13/1

LEAD Journal (Law, Environment and Development Journal)
is a peer-reviewed academic publication based in New Delhi and London and jointly managed by the
Law, Environment and Development Centre of SOAS University of London
and the International Environmental Law Research Centre (IELRC).
LEAD is published at www.lead-journal.org
info@lead-journal.org
ISSN 1746-5893

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This document can be cited as
Jenny Grönwall and Anna C. Jonsson, 'Regulating Effluents From India's Textile Sector:
New Commands and Compliance Monitoring for Zero Liquid Discharge',
13/1 *Law, Environment and Development Journal* (2017), p. 13,
available at <http://www.lead-journal.org/content/17013.pdf>

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* **Acknowledgements:** Funding for this study was provided by the Swedish Research Council Form as, grant number 2014-8646-27375-33. We wish to thank all informants who have generously shared their time and insights, our field assistants, and two anonymous reviewers.

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1

INTRODUCTION

The textile industry's excessive water use and contribution to ever-worsening environmental degradation in countries of production, particularly the so-called global South, is increasingly putting it under public scrutiny. However, this sector of the economy also provides important income opportunities to skilled and unskilled labor alike, not least women,¹ and brings much-wanted economic growth. India was the third largest exporter of textiles in 2015 and the sector generates direct employment to more than 45 million people, making it the second largest after agriculture.²

In 2016 large parts of India had experienced failing monsoons for two consecutive years and the water scarcity was noticeable, impacting on everything from how the hugely popular IPL cricket matches were juggled between states unwilling to allocate water to maintain the playing fields, to how courts directed state governments to de-authorize breweries their water rights.³ Textiles production would have seemed a natural target in the quest for solutions when re-distribution of water between sectors became imperative. Nonetheless, the window of opportunity that the legislator had to introduce forceful requirements for reuse of water in-house in combination with more stringent discharge standards was effectively missed. That this is to be considered unfortunate – but maybe also to be expected – stems

from how the conventional command-and-control (CAC) regime still dominates the approach to environmental protection and natural resources management in India.

Despite environmental legislation first enacted in the early 1970s, it has been held that the success in abating and controlling pollution has been limited due to poor monitoring and enforcement of environmental laws by the Pollution Control Boards (PCBs), which in turn is due to slow response of courts in enforcing actions sought by PCBs, financial constraint of the Boards, low penalties for non-compliance, widespread corruption and preponderance of small-scale units that lack any technical, financial and managerial capabilities to treat their effluents.⁴ This captures the classic challenge for regulation of behaviour that is based on government institutions setting standards for industrial emissions and/or the recipient, then seeking to control the adherence to the stipulated rules. Advocates for letting the corporate world take necessary initiatives to manage their environmental impact have for long claimed that further expansion of CAC regulations is likely to have diminishing marginal returns because transaction costs for implementation, compliance and enforcement are increasing.⁵ In contrast, it has been shown that the nominal inefficiency of CAC is contextual and depends on the regulatory regime as a whole being efficient, and on the goals and concerns of policy-makers.⁶

In 2014, national law and policy began to undergo a major reform and move towards what is often referred to as a 'circular economy'.⁷ At the end of 2015, the Ministry of Environment, Forest and Climate Change

1 G Lopez-Acevedo and R Robertson, *Stitches to Riches? Apparel Employment, Trade, and Economic Development in South Asia*, Directions in Development – Poverty (World Bank 2016) <<http://hdl.handle.net/10986/23961>> accessed 3 May 2017.

2 World Trade Organization, World Trade Statistical Review 2016 <https://www.wto.org/english/res_e/statis_e/wts2016_e/wts2016_e.pdf> accessed 3 May 2017; Ministry of Textiles, Annual Report 2015-16 <http://texmin.nic.in/sites/default/files/ar_15_16_ENG.pdf> accessed 3 May 2017.

3 See P Sakthivel, 'War for Water in India' (21 May 2016) LIV(22) *Mainstream Weekly* <<http://www.mainstreamweekly.net/article6429.html>> accessed 3 May 2017; Down to Earth, In-depth Coverage: Drought *Down to Earth* (New Delhi, 1-15 May 2016).

4 M Karpagam, S Thiyagarajan and G Jaikumar, 'An Appraisal of India's Policy to Control Industrial Water Pollution' (2012) 9(1) *International Journal of Environment and Development* 45-61.

5 D Rondinelli and M Berry, 'Corporate Environmental Management and Public Policy: Bridging the Gap' (2000) 44(2) *American Behavioral Scientist* 168-87.

6 D Cole and P Grossman, 'When is Command-and-control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection' (1999) *Wisconsin Law Review* 887-938.

7 See E Worrell and M A Reuter, 'Recycling: A Key Factor for Resource Efficiency' in E Worrell and M A Reuter (eds), *Handbook of Recycling* (Elsevier 2014) 3-8.

(MoEFCC) issued a *Draft Notification for Amendment Rules on Standards for Effluent from the Textile Industry*, proposing that all cotton and woolen processing units but the very smallest achieve so-called zero liquid discharge (ZLD).⁸ The legislator acted largely as a result of a court-driven development that ultimately aimed at driving polluters to install wastewater treatment plants and improve resource efficiency, through pushing the Central Pollution Control Board (CPCB) and state authorities to issue directions and take various other actions.

A year later, however, the reform culminated with stricter standards being enacted – but little remained of the foreseen paradigm shift promoting water reuse and ZLD. Inside the black box of decision making the rationale behind pushing for change was lost and with it the will to bring about necessary restrictions that would have been well received at least by other sectors competing over the same scarce water resources.

1.1 Aim and Methods

This paper has a dual purpose. It first aims to examine the command-side of regulation by shedding light on the applicable law, the reform steps taken in 2014–16 and how judicial interventions influenced these. Secondly, it seeks to contribute to the understanding of enforcement control by discussing what role court-established committees are playing in implementation and monitoring of compliance. Examples relevant to the regulation of the textile industry are drawn from the Tirupur region.

The paper builds on secondary sources and an in-depth case study of the Tirupur region in the state of Tamil Nadu, southern India, conducted through repeat visits from September 2015 to February 2017. The empirical findings are based on observations and field visits (at factories, effluent treatment plants, an industrial park, and downstream locations including the Orathupalayam Dam), and semi-structured, open-ended interviews as well as informal discussions with

more than 100 informants, conducted in the Tirupur region, Chennai, and Bangalore. Respondents included industrialists (unit owners and managers at production level), representatives of Western retail brands (buyers), the PCBs in Tamil Nadu (TNPCB) and Karnataka, the CPCB in New Delhi, lawyers, judges, farmers, consultants, sector experts and scholars. Given the sensitive nature of an industry characterized by confidentiality the informants spoke only on condition of anonymity, wherefore no oral sources are named here. Participation in a workshop on the Draft Notification Amendment Rules organized by the CPCB in New Delhi in February 2016 provided insights into the legislative process and the industry's response. The literature included statutory legislation and court orders, policy guidelines, reports and grey literature, news articles and blogs.

2

CURRENT LAW AND REFORM STEPS

2.1 Background

The Tirupur region is the first Indian cluster known for practicing ZLD in a systematic manner. In short, ZLD requires the industrial unit or effluent treatment plant to employ various technologies to treat wastewater, most commonly through several stages of membrane filters followed by reverse osmosis (RO) reject management, thus enabling reuse of process water in-house. Some water is inevitably lost in the process, mainly during evaporation stage(s); makeup water must be added and ZLD therefore does not equal 100 per cent reuse.⁹ Dry sludge, including mixed waste salts, is a by-product. The costs – especially for the additional energy, replacement of membranes, and skilled manpower – are high but can be evened out mainly where the raw water is costly and the factory can recover sodium sulphate (Glauber's salt). While ZLD is no silver bullet for sustainability, the general idea of

8 Ministry of Environment, Forest and Climate Change, *Draft Notification: Standards for Effluents from textile industry (2015)* <<http://www.moef.gov.in/sites/default/files/Effluents%20from%20Textile%202.12.15.PDF>> accessed 3 May 2017.

9 T Tong and M Elimelech, 'The Global Rise of Zero Liquid Discharge for Wastewater Management: Drivers, Technologies, and Future Directions' (2016) 50(13) *Environ. Sci. Technol.* 6846-55.

a near-closed system is gaining traction also within the world of textiles.¹⁰

While ‘Tirupur’ sometimes refers only to the town or the administrative district with the same name it is in fact a region consisting of several adjacent districts specialized in different types of textiles production. The Tirupur District itself manufactures around half of India’s total knitwear (jersey) textiles export; it provides direct employment to over 570,000 workers and indirectly to about 1 million people. It counts some 800 garment factories and exporting firms and 1,200 merchant exporters, 425 registered dyeing units and more than 3,000 finishing units, as well as about 2,000 Micro, Small and Medium-sized Enterprises (MSMEs) targeting the domestic market.¹¹ In addition there are so-called wild-cat units that operate from residential buildings and engage in for instance bucket-dyeing of small items like buttons and zippers.

Exports from Tirupur began in the 1970s and exploded after 1991. The impact from poorly- if at all – treated effluents soon became a nuisance for farmers and domestic water users locally and downstream. The development involves a very large number of government orders and court proceedings in the Madras High Court, the Supreme Court and the National Green Tribunal from the late 1980 still this day. Among other steps, a farmers’ association filed a public interest litigation against the textile dyers and in 2004, the High Court granted interim injunction to restrain the respondents from discharging effluents directly or indirectly into the Noyyal River that flows through Tirupur. Half a year later, the TNPCB followed up by issuing *show cause notices* to all of the then 729 dyeing or bleaching units in Tirupur, requiring that they abide by the effluent treatment standards (see 2.2 below) and achieve ZLD by May 2005. But deadlines were not obeyed and the court decided to

constitute an Expert Committee to investigate the pollution problems of the Noyyal River, including the Orathupalayam Dam, constructed in 1992 for irrigation purposes but holding only toxic wastewater and sludge. The committee had six members, coordinated by a District Collector. It was tasked with ‘giving the ways and means to clean the stored water and release the treated water in the river, and for removing the sludge that has formed in the dam area [...] and also to suggest an immediate action plan for remediation of the Noyyal river and for preventing the discharge of polluted trade effluents’.¹²

Asked to report back periodically the Expert Committee filed 19 reports before the court between May 2005 and October 2011, each after having inspected the affected areas, involved stakeholders in meetings, and encouraged actors to submit information. In the first report, it stated that ZLD would be the only solution – and recommended that an independent Monitoring Committee should be appointed to review and report on the progress by the industrialists and involved authorities every three months.¹³ Such was established in August 2005, featuring three advocates appointed to check on the setting up of RO plants and other related matters, and submit periodic reports on implementation.

One of the main interventions of the Monitoring Committee came in August 2006, when it commended a system of imposing an ascending fine on the ‘free-riders’ until satisfactory compliance. The penalty suggested was related to the savings made by the Common Effluent Treatment Plants (CETPs) and their member units who had not implemented the ZLD concept but gained commercial advantage of lesser production cost when compared to those units who faithfully implemented the court order. The levied fine would go towards remedy of polluted water bodies.¹⁴

10 J Dasgupta and Others, ‘Remediation of Textile Effluents by Membrane Based Treatment Techniques: A State of the Art Review’ (2015) 147 *J Environmental Management* 55-72; I Vergili et al., ‘Techno-economic Analysis of Textile Dye Bath Wastewater Treatment by Integrated Membrane Processes under the Zero Liquid Discharge Approach’ (2012) 58 *Resources, Conservation and Recycling* 25-35.

11 Confederation of Indian Industry and the Sripuram Trust, ‘Tirupur Vision 2020’ (2016) [available on file with the authors].

12 P Swaminathan, ‘Regulating Industrialization Through Public Action and Legal Intervention: Interpreting an Ongoing Experiment in Tamil Nadu’ in K Das (ed), *Globalization and Standards: Issues and Challenges in Indian Business* (Springer 2014) 225-44.

13 *ibid.*

14 *Noyyal River Ayacutdars Protection Ass. and Ors. v. Government of TN, Public Works Department and Ors.*, Decided on 22 December 2006, 2007 (1) LW 275.

Regardless, different judges repeatedly granted extended time giving leeway to unit owners to implement ZLD in a phased manner. On 28 January 2011, however, a Division Bench decided on the immediate closure of over 700 textile processing factories and all 20 CETPs in Tirupur.¹⁵ This time, ‘fully convinced that unless stringent and deterrent action is taken [...] the water of the Noyyal river cannot be made free from the poisonous substances discharged from these [dyeing and bleaching] units and the water shall not be fit for human consumption’, criminal proceedings were to be taken against violators. The judges found that the facts of the case revealed a ‘very gloomy picture as to the manner in which the TNPCB has dealt with the issue’ and chose to issue contempt notices to the Board for its failure to act. The court order was accompanied by a demand that the names of the officers in charge of the matter were to be provided, and appropriate action taken against them.¹⁶

Crucially, though, the court ordered the Monitoring Committee to form a Joint Inspection Team together with the TNPCB and to submit a report for each individual unit. The TNPCB’s Chairman appointed four officers and the Committee added an independent expert. During the following two years, units and CETPs were subject to rapid assessments involving two or three visits during which the Team went through logbooks, records, the machinery, and infrastructure. In February 2011 a handful of factories were found to have satisfactorily achieved ZLD at their individual effluent treatment plants (IETPs) and could be given approval to continue operations. However, the audits revealed that a large number of the inspected units had been operating without a valid consent or that the production had been expanded beyond the permit given. Bypass arrangements of untreated effluent into nearby surface water streams with a Total Dissolved Solids (TDS) value surpassing 7,000 mg/L were noted, as well as general disuse of RO components and ‘poor housekeeping’. Oftentimes, treatment machinery was not operational. Each of these yet unpublished unit reports came with a detailed list of recommendations on what needed to be rectified

as well as on what the TNPCB should subsequently take into consideration after due diligence. The Team’s findings triggered continuous court proceedings in several cases, and many units remained closed for up to two years until renewed consents were approved.

However, Tamil Nadu underwent assembly elections in April 2011 and ‘Tirupur’ became a contested political issue. The AIADMK party, which eventually won most seats, was very vocal against the High Court ruling during the election campaign. The new government formed a high-level committee, alternative technical solutions to ZLD were looked into, and finally an INR 2 billion (ca. USD 30 million) interest-free loan was made available to the CETPs to comply with the order.¹⁷ There was heavy political pressure to balance the interests involved; economic growth, inflow of foreign exchange and job opportunities weighed heavier than the interest of local farmers and environmental protection. Consequently, the CETPs and their member units were allowed to resume on trial basis but with reduced capacity, and within two years most of the factories with individual treatment plants had been granted renewed consents. But many never reopened again, at least not formally or in Tirupur.

2.2 Applicable Statutory Law

As far as ‘command’ goes, the Indian textile industry is regulated in statutory law such as the Environment (Protection) Act, 1986 (Environment Act), but until recently the standards were scattered, non-comprehensive and outdated. ‘Wet processing’ textile manufacturing (with desizing, scouring, bleaching, mercerizing, dyeing, printing, and/or finishing steps) is mainly regulated under the Environment Act and Environment (Protection) Rules, 1986 (Environment Protection Rules), the Water (Prevention and Control of Pollution) Act, 1974 (Water Act), the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, and the Air (Prevention and Control of Pollution) Act, 1981. Factories and effluent treatment plants handling hazardous substances must, inter alia, ensure to label

¹⁵ *Noyyal River Ayacutdars Protection Association v. Ramasundaram, I.A.S. and Ors.*, Decided on 28 January 2011, LS/Mad/2011/506.

¹⁶ *ibid.*

¹⁷ B Valsan, ‘Dead River’s Revenge’ *The Times of India* (New Delhi, 2 August 2011).

containers properly and put up 'material safety data sheets'. Generally, middlemen handle sludge before its disposal at landfills. Meanwhile, the regulation of garment factories largely depends on whether they have in-house washing facilities. Companies can apply for integrated permits under a common consent application regime. A permit is valid for a specified time under the conditions imposed by the PCB, which is to maintain an open register with all such conditions.

There are no environmental quality standards issued for water recipients but emission limit values (end-of-pipe regulation) are listed as standards in the Environment Rules with Schedules. In Schedule I the standards presently encompass more than 100 specified industries, listing for instance 'Dye and dye intermediate industry' (S. No. 8), and CETPs (S. No. 55).

The latter was amended with effect from 1 January 2016. 'Inlet standards' are now to be decided by state PCBs. Different standards are stipulated for the treated effluent for several parameters depending on if discharge is made into inland surface water, 'on land for irrigation', or into the sea (so-called marine outfall). Discharge into the ground (through injection wells) is a common practice but is not listed. A standard of fundamental importance for treatment plants that receive wastewater from textile dyeing units is the level of TDS, which reflects the mineral (dye fixing) salt and heavy metal content of the water. In the previous version of S. No. 55, the parameter 'Dissolved solids (inorganic)' was generally read as referring to TDS but in the amended rule, the parameter has been replaced by 'Fixed dissolved solids (FDS)'. This typographical error may cause serious impact until eventually changed, because the standard of 2,100 mg/l for discharge into inland surface water and on land equals a TDS of 3,500!

A new S. No. 92 was added in September 2000, setting 'Standards for effluents from the textile industry' in nine parameters. These came in addition to S. No. 6-7 ('Cotton textile industries (composite and processing)' and 'Composite woollen [sic] mills', respectively). Relaxed BOD (Biochemical Oxygen Demand) and COD (Chemical Oxygen Demand) limits applied if the effluents went via the sewer system to a municipal treatment plant.

The Environment Rules prescribe that industries which are not covered under Schedule I must comply with general standards for discharge of environmental pollutants as per Schedule VI. These standards function as the national minimum for polluters and stipulate limits for parameters such as pH, total suspended solids, and BOD; there are additional parameters for factories using chrome dyes, sulphur dyes and/or phenolic compounds. The CPCB or individual state PCBs are empowered to specify more stringent standards when the quality of the recipient calls for this. Tamil Nadu had, as the only PCB in the country, set tolerance limits for so-called trade effluents; for inorganic dissolved solids (of which TDS is one group) it is 2,100 mg/l.

The majority of textile factories in India rely on groundwater, from own wells and/or purchased from landowners who deliver by tanker. As a main rule the colonial legal framework allows landowners to abstract unlimited amounts without prior authorization, but under Guidelines issued by the Central Ground Water Authority regarding 162 *notified areas*, abstraction of groundwater through energized pumping can only be granted for drinking water purpose. Water-intensive industries such as textiles (specified as dyeing, printing and spinning) must obtain a No Objection Certificate from the competent authorities in areas where the groundwater situation is categorized as *critical*, *semi-critical* or *safe*; from 2015 this applies also to existing factories. They shall not be granted certificate for groundwater abstraction in *over-exploited* areas, and permit renewal for those to which it was issued prior to November 2012 was to be done by the Authority initially for two years and subsequently for every three years.¹⁸ The maximum permissible abstraction volume depends on different stipulated levels of groundwater recharge; however, treated (waste-) water is not to be used for this purpose and it should in theory therefore be hard for wet processing units to obtain the necessary consent. In reality, though, the implementation of the groundwater Guidelines has hitherto been negligible.

¹⁸ Central Ground Water Authority, Revised Guidelines/ Criteria for Evaluation of Proposals/Requests for Ground Water Abstraction (2015) <http://www.cgwb.gov.in/CGWA/Documents/Revised%20guidelines_12112015.pdf> accessed 3 May 2017.

Several states are regulating groundwater use after adopting a Model Bill circulated by the Centre. In Tamil Nadu, a Government Order prohibits abstraction for commercial purposes.¹⁹ This was issued in part to guarantee a water supply Concession Agreement to the New Tirupur Area Development Company, Ltd, the purpose of which would be defeated if groundwater could still be pumped and sold by individuals. This unique PPP arrangement came into existence mainly for the textile industry in the town of Tirupur (but not the entire District), requiring units to purchase pretreated surface water from the Company. Though this may work out to be cheaper considering the poor quality of the local groundwater, it comes with its own set of issues.²⁰ The Company has not made any figures on water demand public but anecdotal evidence suggests that a few years after the Government Order came into force, an increasing number of dyeing units resumed abstraction and purchase of groundwater.

Management of surface as well as groundwater has gradually risen on the national agenda, as part of general efforts to protect what are regarded as polluted, scarce and shared water resources. It is widely recognized that industrial wastewater is more often than not discharged in an untreated or poorly treated state, and that allocation of water for drinking and agricultural purposes must be prioritized over industrial use. More advanced and modern technologies beyond the conventional physico-chemical and biological (primary and secondary) treatment steps are regularly referred to. It is against this background that the introduction of 'zero liquid discharge' should be understood.

19 Public Works Department (PWD), Government of Tamil Nadu, G.O.(Ms) No.52, Public Works (R2) Department 02.03.2012, Chennai.

20 See G Dwivedi, 'Public Private Partnerships and Lessons from Tiruppur Water Supply and Sewerage Project', Third International Conference on Public Policy and Management, IIM-Bangalore, August 2008 <http://www.indiawaterportal.org/sites/indiawaterportal.org/files/Public-private%20partnerships%20and%20lessons%20from%20Tiruppur%20Water%20Supply%20and%20Sewerage%20Project_Gaurav%20Dwivedi_Manthan%20Adhyayan%20Kendra_2008.pdf> accessed 3 May 2017; R Madhav, 'Tirupur Water Supply and Sanitation Project: An Impediment to Sustainable Water Management?' (2008) IELRC Working Paper 2008-01 <<http://www.ielrc.org/content/w0801.pdf>> accessed 3 May 2017.

2.3 Recent Amendments and Court Decisions

When the Narendra Modi government took power in 2014, it announced strong intentions to clean up the holy Ganga (Ganges) River. Half a year later the government's inaction set the Supreme Court in motion on a war footing. In a case initiated already in 1984, which was followed by a series of orders passed by the court on several occasions, it was noted that over the past 30 years no fruitful result had been achieved so far except the shutting down of some of the polluting units. This was 'largely because while orders have been passed by us their implementation remains in the hands of statutory authorities including the CPCB and the State PCBs which have done practically nothing to effectuate those orders or to take independent steps that would prevent pollution in the river. A total lack of monitoring by the statutory bodies has also contributed to the current state of affairs'.²¹ The court now instead referred the task of enforcement on the National Green Tribunal (Tribunal), set up in 2010, and requested it 'to look into all relevant aspects and to pass appropriate directions against all those found to be violating the law'.²²

Following the apex court's decision, the Tribunal convened immediately, and found it necessary to constitute appropriate committees at different levels to ensure proper implementation of its orders and for reporting monthly on the work executed at site.²³ The Tribunal further directed the authorities to issue guidelines on 'zero discharge units', defined as 'a unit which does not discharge any amount of liquid effluents, not even treated effluents. It may be as a result of complete recycling of its effluents or evaporation or because of adoption of any other mechanical process, like incinerator etc'.²⁴

21 *M.C. Mehta v. Union of India*, W.P.(C.) No. 3727/1985, Decided on 29 October 2014 <https://nmcg.nic.in/writereaddata/fileupload/2_WP%20No.%2037271985.pdf> accessed 3 May 2017.

22 *ibid.*

23 *Krishan Kant Singh v. M/s. Hindustan Coca-Cola Beverages Pvt. Ltd., Mehdiganj, Rajatalab, Varanasi and Ors.*, O.A. No. 196/2014, Decided on 17 November 2014 National Green Tribunal (Principal Bench) <[http://www.greentribunal.gov.in/Writereaddata/Downloads/479-2014\(PB-I\)OA-17-11-2014.pdf](http://www.greentribunal.gov.in/Writereaddata/Downloads/479-2014(PB-I)OA-17-11-2014.pdf)> accessed 3 May 2017.

24 *ibid.*

A year later, in December 2015, the Tribunal summarized its work so far, listing that it had held consultative meetings with the stakeholders and decided to direct the constitution of a Joint Inspection Team for the first phase of the work concerning the Ganga River.²⁵ This team was, inter alia, to inspect the functioning of the few existing CETPs/IETPs. Further, the MoEFCC was directed to issue clarifications on its definition of zero liquid discharge units as well as an overview of the classification of industries under different categories.

The classification issue was dealt with through Directions issued in March 2016.²⁶ A new category was introduced for 'practically non-polluting' industries that do not require environmental clearance. Underwear garment units ('Cotton and woolen hosiers [sic] making') now fall under this, meaning that manufacturers that outsource the washing can set up business and operate more easily. Yarn and textile processing, dyes and dye intermediates production, tanneries and manufacturing of synthetic fibers remain in the red category.

In January 2015 the CPCB issued *Guidelines on the Techno-Economic Feasibility of Implementation of ZLD for Water Polluting Industries*. These included dyeing and textiles, pharmaceuticals, paper and pulp, tanneries, and refineries, partly with the motive to streamline the interpretation of the concept hitherto done by the courts.²⁷ The Guidelines aimed to assist CPCB/PCBs in 'insisting industries to reduce water consumption'.

25 *Indian Council for Enviro-Legal Action v. National Ganga River Basin Authority and Ors.*, O.A. No. 10/2015 and O.A. 2007/2014, Decided on 10 December 2015, National Green Tribunal (Principal Bench) <[http://www.greentribunal.gov.in/Writereaddata/Downloads/200-2014\(PB-I-Judg\)OA_18-12-2015.pdf](http://www.greentribunal.gov.in/Writereaddata/Downloads/200-2014(PB-I-Judg)OA_18-12-2015.pdf)> accessed 3 May 2017.

26 Central Pollution Control Board, Modified Directions Regarding Harmonization of Classification of Industrial Sectors, New Delhi, 7 March 2016 <http://cpcb.nic.in/upload/Latest/Latest_118_Final_Directions.pdf> accessed 3 May 2017.

27 Central Pollution Control Board, Guidelines on the Techno-economic Feasibility of Implementation of Zero Liquid Discharge (ZLD) for Water Polluting Industries, New Delhi, 19 June 2015 <<http://www.indiaenvironmentportal.org.in/files/file/Final-ZLD%20water%20polluting%20industries.pdf>> accessed 3 May 2017.

ZLD here 'refers to installation of facilities and system which will enable industrial effluent for absolute recycling of permeate and converting solute (dissolved organic and in-organic compounds/salts) into residue in the solid form by adopting method of concentration and thermal evaporation. ZLD will be recognized and certified based on two broad parameters that is, water consumption versus wastewater reused or recycled (permeate) and corresponding solids recovered (% total dissolved /suspended solids in effluents)'.²⁸ No groundwater injection or use of the effluents or permeate for irrigation or horticulture would be allowed. RO, micro/nano filtration and Multiple Effect Evaporators (MEE) were mentioned as options, and the industry was encouraged to continue the technical development.

In February 2015, under the Water Act and with reference to the Environment Act and the Environment Rules, the CPCB made use of its power to stipulate more stringent standards for discharge of pollutants. It issued Directions to the wet processing textiles sector in the nine states within the Ganga River basin to implement ZLD-based CETPs and IETPs as part of a wider effort to pursue the installation of effluent treatment plants and decrease the impact on the river's water quality. Textile units that released more than 25,000 L/day (25 KLD) were given 16 months till the end of December 2016 to put in place the required infrastructure and ensure that the technique functioned. Reuse of water in-house was incentivized through a prohibition to abstract groundwater or use surface water or the municipal water supply for anything but so-called makeup water. Revised modified directions were issued twice in the following months to clarify when the use of groundwater was allowed as make-up water, and the state PCBs were encouraged to draw further guidelines for assessment and implementation.²⁹

From 2014 and onwards, domestic news media and international industry newsletters reported regularly

28 *ibid.*

29 Central Pollution Control Board, Revised Modified Direction under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 to textile units and clusters, New Delhi, 16 July 2015 <http://cpcb.nic.in/upload/Latest/Latest_107_Direction_textile_160715.pdf> accessed 3 May 2017.

about the authorities and courts cracking down on, among others, large textile clusters in Rajasthan,³⁰ factories in the Tirupur region³¹ and units in the Ganga River basin.³² The MoEFCC, CPCB and state PCBs intervened on several occasions during 2016, closing over 400 factories in all sectors.³³ The latter drive was partly based on Directions issued in 2014 as well as later regarding installation of online continuous effluent monitoring systems (with flow meters and web cameras at units going for ZLD), with a deadline of March 2015.³⁴ Nonetheless, the National Green Tribunal lamented numerous times that the executive bodies did not comply with its orders.³⁵

30 '500 Textiles Units Flout Green Norms in Pali District, Faces Court Ire' *The Hindustan Times* (Jaipur, 8 March 2014) <<http://www.hindustantimes.com/jaipur/500-textiles-units-flout-green-norms-in-pali-district-faces-court-ire/story-4Rc6xih891V6pctIPgnmJL.html>> accessed 3 May 2017; P J Joychen, 'No Court Relief for Sanganeer Textile Units' *The Times of India* (Jaipur, 20 May 2015) <<http://timesofindia.indiatimes.com/city/jaipur/No-court-relief-for-Sanganeer-textile-units/articleshow/47351939.cms>> accessed 3 May 2017.

31 R Vimal Kumar, 'Continuing Effluent Discharge into River Noyyal Worries Farmers' *The Hindu* (Tamil Nadu, 16 September 2016) <<http://www.thehindu.com/news/national/tamil-nadu/continuing-effluent-discharge-into-river-noyyal-worries-farmers/article9113344.ece>> accessed 3 May 2017.

32 S Rautray, 'Supreme Court Asks National Green Tribunal to Act Against Industrial Units Polluting Ganga' *The Economic Times* (30 October 2014) <http://articles.economictimes.indiatimes.com/2014-10-30/news/55595475_1_industrial-units-effluents-top-court> accessed 3 May 2017.

33 'CPCB Orders Closure of 442 Industrial Units' *The Times of India* (New Delhi, 14 May 2016) <<http://timesofindia.indiatimes.com/india/CPCB-orders-closure-of-442-industrial-units/articleshow/51393949.cms>> accessed 3 May 2017.

34 Central Pollution Control Board, Directions under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 in the matter of pollution control in 17 category of highly polluting industries, CETPs and common hazardous waste and biomedical waste incinerators - regarding self monitoring of compliance, New Delhi, 5 February 2014 <http://www.cpcb.nic.in/upload/Latest/Latest_89_Direction_05022014.pdf> accessed 3 May 2017.

35 *M.C. Mehta v. Union of India* & Ors., O.A. No. 200 of 2014, Decided on 19 October 2016, National Green Tribunal (Principal Bench) <<http://www.indiaenvironmentportal.org.in/files/Ganga%20Pollution%20Segment%20B%20Phase%20I%20NGT%20Order.pdf>> accessed 3 May 2017.

3

ZLD IN STATUTORY LAW: FROM PROPOSAL TO AMENDMENT RULES

3.1 The Drafting Phase

In October 2015 the MoEFCC published a Draft Notification, containing proposed Amendment Rules to S. No. 6-7 and 92 of the Environment Rules.³⁶ The proposed new Rules contained three parts. The first encompassed essentially the same parameters and standards for discharge as S. No. 6 before, but with a wider application to '[t]extile units (having dyeing process/ cotton or woolen processing units and all integrated textile units) where wastewater discharge is equal to or less than 25 KLD' (see Table 1).³⁷ Thus, large parts of the wet processing sub-sector were covered but for instance man-made fibers were left outside the scope of application.

36 MoEFCC, 'Draft Notification: Standards for Effluents from Textile Industry' (note 8 above).

37 *ibid.*

Parameter	Standard		
EFFLUENTS	Concentration values in mg/l except for pH, colour, Bioassay and SAR		
	<i>Prev. S. No 6</i>	<i>Draft</i>	<i>Enacted version</i>
pH	5.5 to 9	5.5 to 8.5	6.5 to 8.5
Suspended Solids	100	100	100
Colour, P.C.U (Platinum Cobalt Units)	NA	150	150
Bio-Chemical Oxygen Demand [3 days at 27°C] (BOD3)	150	30	30
Oil and Grease	10	10	10
Chemical Oxygen Demand (COD)	NA	250	250
Total Chromium as (Cr)	2	2	2.0
Sulphide (as S)	2	2	2.0
Phenolic Compounds (as C ₄ H ₂ O ₂ H)	5	1	1.0
Total Dissolved Solids, Inorganic (TDS)	NA	2,100	2,100
Sodium Absorption Ratio (SAR)	NA	26	26
Bio-assay	NA	90 per cent survival of fish after 96 hrs	NA
Ammonical Nitrogen (as N)	NA	NA	50

Table 1. Chart comparing standards for discharge of effluents from Indian textile industry.

NA indicates that a standard for the parameter was/is not applicable.

The second and third parts of the Draft, applicable to units with wastewater discharge greater than 25 KLD, were the ones stirring emotions for seeking to introduce far-reaching changes. Such units were to establish ZLD [enabled] effluent treatment plants within 30 months; if [located] ‘in clusters’ they were

to establish both ZLD and CETPs. The draft specified the use of ‘Reverse Osmosis/Multi Effect Evaporators’ as imperative, and that recovered water from the ZLD plants ‘shall be reused in the process by the units’. Further, no groundwater abstraction apart from for make-up water and drinking would be allowed.³⁸

Once the Draft Notification was published on the MoEFCC’s website in 2015, 30 days’ time was allowed

³⁸ *ibid.*

for public consultation – but no industry dialogue was initiated to obtain input. When the proposed changes to the legislation were pointed to during interviews for this study, many representatives of the sector expressed surprise. The reactions varied among stakeholders. In discussions with different representatives of multi-national Western brands with a declared interest in the long-term viability of the sector it emerged that though the trust in the state PCBs' capacity to enforce compliance was low, a levelling of the playing field through modernized standards involving ZLD was well received. However, the development was a matter of concern from the industry's perspective. As welcome as this regulatory step should have appeared to be among purportedly compliant companies, interested in evening out the unfair competition especially for Tirupur, it was also generally believed that already steep implementation challenges would mount and involve increasing amounts of money under the table having to be paid to the executive authorities.

At a workshop arranged by the CPCB and MoEFCC in New Delhi in February 2016 to discuss the Draft and comments obtained on it, most industrialists participating from all over the country dismissed the ZLD technique, claiming that the cost/benefit-ratio would not work in their favor and that the trade-off included higher energy usage. Another aspect was the need for tailored guidance on a 'best practice' to make ZLD techniques economically feasible while rendering optimized water reuse without discharge. There was little consensus on what wastewater treatment components would be suitable and indispensable even under similar conditions; the size of the additional costs for achieving ZLD was also debated. Interviews, discussions and secondary sources obtained for this study could not clarify with certainty who were proponents and who were opponents of the concept and the various techniques. The fact that the influential group representing Tirupur's CETPs had sunk costs in one particular ZLD method for enabling evaporation (Mechanical Vapour Recompression in combination with so-called brine reuse) influenced the willingness to accept a transition to Multiple Effect Evaporators, such as the Draft Notification stipulated. From the Tirupur industrialists' point of view, they had been subject to a giant trial and error experiment at their expense and while claiming to be already compliant at this stage, marine outfall via pipelines to the sea – for

long practiced in Gujarat – was argued for. It was expressed that the byproduct after the initial wastewater treatment steps would anyway be 'only salt'.

The inevitable compromise between water conservation and ecosystem protection, on the one hand, and increased energy demand and greenhouse gas emissions, on the other, was however not discussed at the meeting in New Delhi, or in the public debate. Neither was the issue of the dearth of competence and technically skilled operators nor were the growth opportunities linked to the raising of capacity at several levels, or the benefits from being able to cater to allegedly eco-friendliness demands from Western buyers.

The ensuing legislative process was instead informed by economic interests. Consultancy firms and membrane manufacturers saw the outlook for their businesses as bright thanks to the necessity to implement technical solutions. But the discontent from most other corners resulted in determined lobbying against the Draft, not least through the media; the MoEFCC and CPCB were given the message that this move would be the death knell to India's textile industry.³⁹ The Ministry of Textiles took a strong stand, declaring that the proposed changes would be 'too stringent' for the domestic textile processing industry that is largely unorganized and comprising of MSMEs.⁴⁰

Given the feedback and revision steps of a typical legislative process, the draft could be expected to undergo shuffling and rearrangement, along with reformulations in a number of respects. It could also be predicted that the final version would not see the light of day for quite some time. One reason behind this was that Tamil Nadu's State Assembly elections

³⁹ See V Dhoot, 'Green Norms May Sound Death Knell for Domestic Textile Industry' *The Hindu* (25 December 2015) <<http://www.thehindu.com/sci-tech/energy-and-environment/green-norms-may-sound-death-knell-for-domestic-textile-industry/article8029387.ece>> accessed 3 May 2017.

⁴⁰ S Arun, 'Green Norms Proposal May Shut Units: Textile Ministry' *The Hindu* (New Delhi 1 January 2016) <<http://www.thehindu.com/business/Industry/green-norms-proposal-may-shut-units-textile-ministry/article8051033.ece>> accessed 3 May 2017.

were scheduled for mid-May 2016. Because of the prominence supposedly given to the experience from ZLD regulation in Tirupur, it was regarded politically impossible to move forward at the central level during the run-up to this ballot vote.

The CPCB handed over a polished but never officially published version to the MoEFCC in mid-2016. Somewhere inside the black box of the revision process the momentum and political will to streamline the ZLD regulation nationwide apparently faded. Despite the drought situation that should have incentivized legislators and industrialists alike to opt for conservation and reuse of water, the end result was in part watered down beyond recognition. Published in the Gazette a year after the Draft was made public, the *Environment (Protection) Fifth Amendment Rules, 2016: Standards for discharge of effluents from textile industry*⁴¹ stipulate essentially the same parameters and standards as in the Draft (see Table 1). Beyond this, there is barely any resemblance between the Draft and the Final version.

3.2 New Standards, Interpreted

The Amendment Rules standards are now binding on '[a]ll Integrated textile units, units of Cotton / Woollen [sic]/Carpets / Polyester, Units having Printing / Dyeing / Bleaching process or manufacturing and Garment units' (emphasis added for widened pertinence compared with Draft). Considering how the applicability of S. No. 6 – now replaced – and S. No. 7 and 92 – now omitted – had only gradually been expanded before, this was a giant advancement in the name of environmental protection.

However, instead of the second and third part that the Draft Notification contained, only Notes accompanied the new standards (see Box 1). At the face of it these Notes introduce a necessary level of flexibility and effectively give far-reaching discretion to the CPCB and the state PCBs to act as may be deemed contextually fit. The formulations in the Notes are,

nonetheless, such that the executive is committed to nothing and hence cannot be held accountable for refraining from taking action. Several unnecessarily vague and undefined wordings are moreover used, such as 'proper' (Note No. 2), and 'exhausting' and 'irrigation' (Note No. 3).

[BOX 1

NOTES:

1. *In case of direct disposal into rivers and lakes, the Central Pollution Control Board (CPCB) or State Pollution Control Boards / Pollution Control Committees (SPCBs / PCCs) *may* specify more stringent standards *depending* upon the quality of the recipient system.
2. **Standards for TDS and SAR shall not be applicable in case of marine disposal through *proper* marine outfall.
3. The treated effluent shall be allowed to be discharged in the ambient environment only after *exhausting* options for reuse in industrial process / *irrigation* in order to minimise freshwater usage.
4. Any textile unit attached with the Common Effluent Treatment Plant (CETP) shall achieve the inlet and treated effluent quality standards as specified in serial number 55 of Schedule-I to the Environment (Protection) Rules, 1986 and shall also be jointly and severally responsible for ensuring compliance.
5. The standalone Micro, Small and Medium Enterprises (MSMEs) as per the MSME Development Act, 2006 shall meet the values specified above.
6. The standalone *large* scale units shall meet the values specified above; *however*, CPCB or SPCBs / PCCs with the approval of CPCB, *may* mandate Zero Liquid Discharge in Large scale units in environmentally sensitive / critical areas.
7. The TDS value with respect to treated effluent shall be 2100 milligramme per litre; however, in case where TDS in intake water is above 1100 milligramme per litre, a maximum *contribution* up to 1000 milligramme per litre shall be permitted provided the maximum value of 3100 milligramme per litre is not exceeded in the treated effluent.

⁴¹ Ministry of Environment, Forest and Climate Change, Environment (Protection) Fifth Amendment Rules, 2016: Standards for discharge of effluents from textile industry, G.S.R. 978(E) New Delhi, 10 October 2016 <<http://www.indiaenvironmentportal.org.in/files/file/Amended%20EPA%20Rules%20textile.pdf>> accessed 3 May 2017.

Box 1. *Standards for discharge of effluents from textile industry. Notes to Fifth Amendment Rules, 2016.*(emphasis added)

END OF BOX]

Note No. 5 of the Amendment Rules states that standalone MSMEs – a medium-sized unit is defined as having investments in plant and machinery below 100 million INR (ca. 1.5 billion USD) – must meet the standards for the set parameters. While this clarifies how the significantly stricter effluent limit values are applicable irrespective of company size and sub-sector as compared with the prior binding regulations, the rule when read next to Note No. 6 means a large step backwards from the Draft Notification; the ZLD norm eventually came to encompass standalone *large* units only. A perverse incentive was thereby introduced against investments in machinery in medium-sized units if this would cause them to cross the 100 million INR line, potentially causing many to split up rather than grow or merge in order not to fall under the purview of Note No. 6. The Draft included wastewater discharge >25 KLD from wet processing units and thereby aimed to capture all but the micro-sized factories. However, as per Note No. 6, the CPCB, or state PCBs with the approval of the CPCB, *may* mandate ZLD exclusively for large, standalone units, meaning such with individual treatment plants.

ZLD can furthermore only be required in ‘environmentally sensitive /critical areas’. The definition of such areas is unclear and there is no obvious link either to areas declared critical by the Central Ground Water Authority, or to monsoon-dependent parts of the country where the year-around flow of streams and rivers can be expected to be too low to dilute effluents. In a similar vein, Note No. 7 allows for the TDS standard to be adjusted upwards where the raw water has a TDS level above 1,100 mg/L, effectively tolerating groundwater that is already affected locally by fixing salts and heavy metals from dyeing processes.

Asked about the likely course of action, a senior officer in the CPCB has held that this body intended to leave it to the state PCBs to govern the industry as deemed fit. In other words, the PCBs have been given expanded authority – but also the ultimate discretion – to determine whether local conditions are such that

freshwater reuse and ZLD should be achieved in them. One example of how the CPCB has handed over the initiative came with renewed directions to the nine Ganga Basin States a month after the new standards; these supersede the different ones issued in 2015 regarding implementation of ZLD and now simply remind the concerned PCBs to ensure strict compliance of the revised standards.⁴² Likewise interviewed on the topic, senior officers with the TNPCB have, however, declared that in their water scarce state, nothing would change after enactment of the new standards: ZLD would continuously be required as per the orders of the Madras High Court. Given that the TNPCB has always required ZLD somewhat beyond what the court ordered, it is noteworthy that the interpretation of Note No. 1 to the standards, stating that the CPCB and PCBs ‘may specify more stringent standards’, varies widely among experts interviewed. The CPCB, for instance, maintains that ‘stricter laws’ in general would be permitted. Eventually, this may need to be clarified by the judiciary.

3.3 Is ZLD = Best Available Technology?

What was originally drafted in 2015 may have been a trial balloon rather than an earnest attempt at reform, to test a way to frame the Best Available Technique (BAT) in times calling for water conservation. If so, the legislator soon reverted on the necessity of blanket regulation for certain wet processing units discharging >25 KLD. This was a sound step back. The choice of ‘Reverse Osmosis/Multiple Effect Evaporators’ as a suitable one size fits all-approach to achieve ZLD was equally problematic, especially when compared with the European Union (EU)’s *BAT Reference document* (BREF) on textiles,⁴³ which contains the following definitions:

⁴² Central Pollution Control Board, Directions under Section 18(1)(b) of the Water (Prevention & Control of pollution) Act, 1974, to ensure compliance of notified standards by Textile units, New Delhi, 28 November 2016, <http://cpcb.nic.in/COMPLIANCE_OF_TEXTILE_UNITS.pdf> accessed 3 May 2017.

⁴³ European Commission, Integrated Pollution Prevention and Control (IPPC) - Reference Document on Best Available Techniques for the Textiles Industry (July 2003) <http://eippcb.jrc.ec.europa.eu/reference/BREF/txt_bref_0703.pdf> accessed 3 May 2017.

- ‘Best’: most effective with respect to the prevention and – where that is not practicable – the reduction of emissions and the impact on the environment as a whole;
- ‘Available’: developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not it is used in the respective EU Member State;
- ‘Technique’: the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

The BREF also stipulates that when issuing operating permits for industrial installations, the competent authority shall set emission limit values which ensure that, under normal operating conditions, emissions do not exceed the levels associated with the BAT as laid down in the so-called *BAT Conclusions*. Crucially, these Conclusions do not prescribe the use of *specific* techniques, but a level of environmental protection that can be achieved *inter alia* by the application of the concept of BAT.⁴⁴ In other words, the desired outcome is determined while the methods of attaining it can be adjusted according to the conditions at hand.

The understanding of the ‘BAT’ prescribes that room should be given for contextualized solutions through which application of methods can be a means to an end. This approach was taken in the enacted Amendment Rules, manifest in that the legislator refrained from stipulating the type/ make of equipment to be used. However, the wordings opted for in the Notes should have been supplemented with an obligatory consideration of the necessary level of water conservation, and stressed that reuse in-house, so as to ultimately enable a circular resource usage, should always take priority. As of now, the ambiguous formulation of Note No. 3, which requires reuse but allows for ‘irrigation’, is far from the BAT concept’s idea of ‘best’. The now outdated CPCB Guidelines of 2015 allowed neither groundwater injection nor

use of the effluents or permeate for irrigation, but the binding new standards effectively permits it. ‘Gardening’ is already a popular pretense for releasing wastewater within or outside the factory walls and it does by no means contribute to *reuse* of water or reduced freshwater demand in the industrial process. Rather, it has a negative impact on the local ecosystem and increases the TDS level of the underlying groundwater resources, eventually rendering them non-potable. This very common practice, alongside so-called injection wells wherein partly or un-treated wastewater is dumped, continues to push Tirupur and many other regions further into a state where remediation difficulties are perpetuated.

When Notes No. 3 and 6 leave interpretation scope with the PCBs to ultimately decide, on a case-by-case basis, the acceptable level of impact on the environment and other users, there are certain rule of law-issues involved as well. The potential lack of predictability, fundamental fairness and equality before the law is detrimental not only from a business point of view, but equally for the realization of the human right to safe drinking water and environmental protection.

Recent research and development on ZLD replaces it by the concept of ‘minimal’ liquid discharge (MLD) that enables up to 95 per cent liquid discharge recovery. This takes into account that attaining the final 3–5 per cent of liquid elimination to achieve ZLD can nearly double the treatment cost.⁴⁵

Experts have claimed that it would be easier for PCBs to control ‘zero’ discharge than ‘minimal’ such; however, the devil is in the details with respect to what evaporation solutions can be deemed ‘most effective’ for prevention and reduction of emissions and, indeed, how PCB officers would distinguish between them.

44 *ibid.*

45 N Hermensen, S Rosenberg and A Gorenflo, ‘MLD Approach Yields Significant Opportunity: Discharge Mitigation Efforts Do Not Need to be an “All or Nothing Proposition”’ *Water Technology* (23 August 2016) <<http://www.watertechonline.com/minimum-liquid-discharge-opportunity/>> accessed 3 May 2017.

4

ENFORCEMENT CONTROL – THE EVER-MISSING LINK?

4.1 Closing the Implementation Gap Through ‘Monitoring Committees’

We return to the control side of CAC and what is perceived as a shortfall in the follow-up on and enforcement of court orders that form part of the so-called implementation gap. The previous section has made numerous references to different kinds of committees, which can be described as ‘court-appointed monitoring committees’.⁴⁶ The increasing use of such committees can be explained by how the Supreme Court has attempted to build up sustained pressure on polluters where the PCBs have failed due to a chronic lack of funding. An increasing number of adjudicators have thereby made inroads on the executive branch, in the interest of securing the implementation of their orders.

An innovative method to do so is the issuing of *continuing mandamus*; an interim order involving directions to a lower authority, which must periodically report back about its performance. This type of command allows judges to monitor compliance through appointed experts, monitoring committees or the like to scrutinize the environmental impact of particular activities, obtain substantial empirical research, gain an accurate understanding of an environmental problem, and/or explore feasible

46 See G Sahu, ‘Implications of Environmental Judgments in Context: A Comparative Analysis of Dahanu Thermal Power Plant Pollution Case in Maharashtra and Vellore Leather Industrial Pollution Case in Tamil Nadu’ (2010) 6(3) *Law, Environment and Development Journal* 335-53 <<http://www.lead-journal.org/content/10335.pdf>> accessed 3 May 2017. See also G Sahu and A Rosencranz, ‘Court-Appointed Monitoring Committees: The Case of the Dahanu Taluka, Environment Protection Authority’ (2009) 5(2) *Law, Environment and Development Journal* 185-92 <<http://www.lead-journal.org/content/09185.pdf>> accessed 3 May 2017.

solutions. It furthermore keeps the petition pending till the final remedy is obtained.⁴⁷

What the judiciary seeks to do when issuing a *continuing mandamus* amounts to stepping in to instruct a government body considered to have failed to take its responsibilities as trustee of the general public and apply, to an appropriate degree, the law.⁴⁸ As Sathe notes, there are conservative as well as dynamic and creative judges, making decisions that are bound to be deemed controversial from one perspective or the other.⁴⁹ The uptake of the ZLD technique in the courtroom and in practice within the textile industry is very much a result of a pro-active stance taken by individual judges but their decisions to push the industry to undertake a technological leapfrog have, in turn, been based on fact-finding of autonomous committees with impartial experts.

4.2 What Can a Monitoring Committee ‘Control’? Experiences From Tirupur

In the landmark decision of January 2011, when the Madras High Court came down hard on the TNPCB for its unwillingness and incapacity to act against the textile industry in Tirupur, the court devised a governance system with checks and balances that was

47 S Divan and A Rosencranz, *Environmental Law and Policy in India: Cases, Materials and Statutes* (Oxford University Press 2002); A Rosencranz and M Jackson, ‘The Delhi Pollution Case: The Supreme Court of India and the Limits of Judicial Power’ (2003) 28(2) *Colum J Envtl L* 223-54; K G Balakrishnan, *D P Shrivastava Memorial Lecture: The Role of the Judiciary in Environmental Protection* (2010) High Court of Chattisgarh, Bilaspur, India <http://supremecourtindia.nic.in/speeches/speeches_2010/dp_shrivastava_memorial_lecture_20-3-10.pdf> accessed 3 May 2017.

48 This pragmatic approach to the culture of non-compliance that permeates even the administration can, nonetheless, be criticized from the point of view of legitimacy; for the court upending the separation of power and assuming executive functions. Cf. how ‘judicial activism’ can be defined as ‘breaches of an effective “separation of powers” between the executive, legislative and judicial branches of government’. See T N Srinivasan, ‘Evolution of Judicial Activism: The Supreme Court of India’ in M Dev and P G Babu (eds), *Development in India: Micro and Macro Perspectives* (Springer 2015) 39-56.

49 S P Sathe, *Judicial Activism in India: Transgressing Borders and Enforcing Limits* (Oxford University Press 2003) lxviii and 284.

vital for reducing the implementation gap and spurring on the control dimension. It was not the first time that the TNPCB was ordered to immediately close factories, only for those to be awarded additional time for compliance again and again – by the same court if not the very same judges. The difference this time can be attributed largely to the appointment of the Expert Committee and the Monitoring Committee, and their mandates to, inter alia, collect data, suggest water treatment methods, and check on the implementation of RO reject management at units and plants in Tirupur.

It was in particular the Monitoring Committee, supplemented by a small group of selected TNPCB officials to form an Inspection Team, which became the court's extended arm. By ensuring that inspections were conducted at every single unit and wastewater treatment plant, the impact on the industrialists as a collective reduced, but each individual owner had to face up to the Team's scrutiny of the operations and take remedial measures.

The Monitoring Committee has submitted boxes of inspection reports to the High Court of Madras since 2005, and in 2017 it still performed unit assessments that included night time visits. More or less serious criticism against individual units and the industry at large has been presented. In 2011 the court laid down that those reports were to 'be the sole basis to assess as to whether the CETPs/IETPs/Units should be granted permission to commence operations' and that '[t]rial run for testing the efficiency of the equipment shall be done in the presence of an [TNPCB] official'.⁵⁰ Irrespective, the Tamil Nadu government soon requested the TNPCB to permit demonstration periods at the CETPs, thereby effectively undermining the court's command in pursuit of the economic sustainability of Tirupur. The vested interests in business-as-usual are manifold and include the company that supplies the industry's raw water.

The two Committees involved in driving the development of Tirupur have raised the level of awareness and expertise of many stakeholders in several vital ways. For instance, the capacity to understand technical aspects of wastewater treatment among judges or other authority persons should not

be overestimated. In the Monitoring Committee's inspection reports, irregularities are pointed out and recommendations given on aspects that are poorly understood even by many factory owners – who themselves mostly lack technical training – and the TNPCB. Because the petition in the 2011 contempt case is still pending, the reports are not official and the units assessed and the recommendations provided therein hence do not reach the public via media or other channels, or the Western retail buyers are comfortably left in the dark with respect to the actual degree of achievement of ZLD in the Tirupur region. That in-house wastewater treatment and reuse of the same is far from fully realized is apparent from field observations for this study as well as the testimonies of a large range of informants.

The need for employing *continuing mandamus* to ensure that the TNPCB implements the court's directions may seem somewhat defeated as there is no final remedy in sight until the Noyyal River is freed of wastewater and the executive takes charge of its control function. Considering that the state of the river is deteriorating rather than improving, a relevant question is whether there is an end in sight to the Monitoring Committee's work. After all, its mandate is limited to inspecting, ordering electricity supply (but not the water) to be cut, and sealing machinery. There is a need for checks and balances to counteract the power of the increasingly politicized PCB institution, but the *continuing mandamus* route indicates that the foundation of the CAC system is flawed. The court and any committee it chooses to institute cannot and should not have to attempt at enforcing adherence to regulation, to ensure behavioral change.

5 CONCLUSIONS

Indian textile and apparel exports have lost the competitive edge to countries like China, Bangladesh, Myanmar, Cambodia and Vietnam in recent years, and to counter this development the Government has approved incentives to create jobs, attract investments and boost exports under the Make in India-drive and the National Textiles Policy. Greater flexibility and less

⁵⁰ *Noyyal River Ayacutdars Protection Association* (note 15 above).

red tape, tax incentives, soft loans and subsidies are a part of the package devised to lift the sector.⁵¹

Meanwhile and in contrast, China has gradually relinquished its leadership position in the textiles sector due to rising wages,⁵² and because of a deliberate shift in production focus under the country's Action Plan on Prevention and Control of Water Pollution from 2015.⁵³ Rethinking how to best allocate its resources to optimize the path towards balancing economics and the environment the textile sector – considered as strategically less important than food or energy security – has come under pressure.⁵⁴ The result is a firm decision to raise the bar for acceptable conduct and compliance that deliberately seeks to target the smallest and dirtiest enterprises with the least possibility to adopt clean technology.

The reform steps taken in 2014–2016 indicate how the landscape has also been changing in India. During this period, in the absence of statutory directions, the judiciary and the federal arm of the executive, the CPCB, progressively filled the regulatory vacuum on ZLD. When the legislator eventually enacted new standards on discharge of effluents from the textile sector and decided that the standards were to apply to essentially the entire industry, it took steps in favor of environmental protection. Yet, it simultaneously chose not to address the actual and looming water security situation; it restricted the opportunity to require ZLD to large-scale units in sensitive or critical areas and furthermore made it subject to the executive's discretion to decide what areas this could apply to.

At face value, Note No. 6 to the Amendment Rules adds a novel middle ground between the end-of-pipe

approach that the emission limit values provides, and the so far missing regulation of pollution load and environmental quality. Thus, the CPCB/PCBs may henceforth take into consideration the carrying capacity of the environment in sensitive or otherwise critical areas. This carries the potential of a paradigm shift, with ZLD adopted as part of an equation where wastewater is a resource. It could result in a technological leapfrog also in, for instance, the state of Maharashtra that has the majority of the large textile units in India. That, in turn, could even out the economic hardship for factories in Tamil Nadu, where the requirement for ZLD already applies.

However, the legislator settled for 'may' in Note No. 6, not 'shall'. The additional costs and expenditures incurred by ZLD achievement was considered prohibitive, and the diluting effect of rivers, other freshwater bodies, the sea and even receiving aquifers was yet again deemed sufficient. The risk of competition – mainly from Bangladesh – disrupting economic development could not be ignored in times characterized by jobless growth. Given the miniscule room for maneuver that the state-level PCBs presently have to drive environmental management, prevention and remedy measures, 'may' is a backdoor for a continuous lax attitude towards freshwater conservation.

In the CAC model for regulation of environmental pollution and natural resources it is conventionally the control side of the equation that is considered problematic. Implementation gaps are increasingly being understood in terms of poor governance, characterized by weak institutional foundations (inter alia, authorities with low capacities working in silos), undeveloped transparency and accountability mechanisms (such as the right to information being valid mainly on paper) and integrity issues (referring to endemic corruption).

This paper has shown that the command side — the setting and reform of standards — can be equally challenging. The virtues of a CAC system hinge on law being enacted and periodically updated by a legislature informed by certain values and priorities, on the one hand, and by access to unbiased information on the topic in question, on the other. If the formulations used in the Notes to the Fifth Amendment Rules are far from ideal to uphold rule of law-principles such as stringency, legal certainty,

51 S Arun, 'Rs. 6,000 Crore Special Package for Textiles' *The Hindu* (New Delhi, 22 June 2016) <<http://www.thehindu.com/news/national/cabinet-brief-on-textiles/article8760243.ece>> accessed 3 May 2017.

52 *ibid.*

53 Notice of the State Council on Issuing the Action Plan on Prevention and Control of Water Pollution GF [2015] No.17. <<http://english.sepa.gov.cn/Resources/Plans/Plans/201605/P020160531584260498694.pdf>> accessed 3 May 2017.

54 China Water Risk, Today's Fight for the Future of Fashion: Is There Room for Fast Fashion in a Beautiful China? *China Water Risk* <<http://chinawaterrisk.org/wp-content/uploads/2016/08/China-Water-Risk-Brief-Todays-Fight-for-the-Future-for-the-Future-17082016-FINAL.pdf>> accessed 3 May 2017.

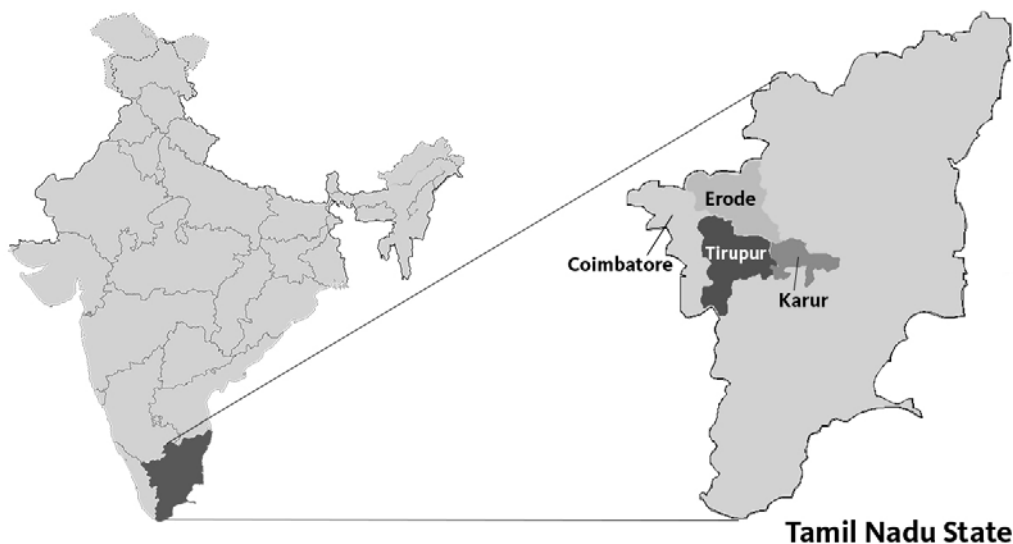
predictability and clarity in the regulatory framework, this may be as a result of the fierce critique that the Draft Notification received during intense lobbying. And if the legislative process was in large part motivated by the Ganga River cleanup campaign, very little of that spirit can be discerned in the end result.

Likewise, if there ever was a window of opportunity to address the drought situation and increasing competition over scarce water resources by mainstreaming the requirement for ZLD, or at least fostering better in-house reuse of wastewater, that now appears closed. As illustrated here a development based on court interpretations and directions to the executive, accompanied by appointments of Expert and Monitoring Committees to follow up on implementation, has pushed the control-side of CAC – but also been a driver behind changes to the command dimension. That the impact has been limited – both in terms of the outcome in the Tirupur region and with regard to the new federal standards for effluent discharge– reflects how technically feasible solutions can only take us so far when the ‘economy over environment’ paradigm still has a hold.

In the academic discourse on a circular economy and in guidelines such as those on BAT in the EU, the road

toward sustainability in the textile sector is characterized by a number of interrelated Rs: *reduce, reuse, recycle, and recover*, with *replace* as a more recently added norm. In the Indian context, the calls for *regulation* add to the picture, but as shown here, economic *reality* dictates the extent to which change can take place. Expectations surrounding the offsetting of costs, competitiveness and survival of the entire sector restrict the willingness to adopt ZLD as an approach along with other measures that would increase resource efficiency.

Despite the rapid transformation of Indian society and the obligation introduced in 2013 on the largest companies to spend two per cent of their average net profits on Corporate Social Responsibility (CSR) activities to promote ‘adoption of responsible business practices’ that include environmental sustainability, natural resource protection and water quality maintenance,⁵⁵ the conventional CAC regime still dominates the approach to environmental protection. However, in the interest of a global pursuit for improved sustainability and efficiency, actors such as Western and domestic retail brands need to step up their efforts to push for better resource management at all levels and show action beyond commitment to so-called CSR.



⁵⁵ See Schedule VII of the Companies Act, 2013 (18 of 2013) as amended, and the Companies (Corporate Social Responsibility Policy) Rules, 2014.

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soas.ac.uk/ledc
and the International Environmental Law Research Centre (IELRC)
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