BILINGUAL PUBLISHING GROUP

Macro Management & Public Policies

Volume 5 · Issue 4 · December 2023 ISSN 2661-3360(Online)

Editor-in-Chief

Dr. Sang-Bing Tsai

Zhongshan Institute, University of Electronic Science and Technology of China, China

Editorial Board Members

Volume 5 Issue 4 • December 2023 • ISSN 2661-3360 (Online)

Macro Management & Public Policies

BILINGUAL PUBLISHING GROUP

BILINGUAL PUBLISHING GROUP

Volume 5 | Issue 4 | December 2023 | Page1-54

Macro Management & Public Policies

Contents

Articles

Short Communication

BILINGUAL PUBLISHING GROUP

Macro Management & Public Policies

https://journals.bilpubgroup.com/index.php/mmpp

ARTICLE

Examining the Effectiveness of Virtual Training under the Kirkpatrick Model: A Post-COVID Study

Neethu Suraj, Abhishek N*

Institute of Management and Commerce, Srinivas University, Mangalore, 574146, India

ABSTRACT

Teaching and training through online tools were used by most Higher Education Institute (HEIs) worldwide during COVID-19 to cater to the needs of students who stay far away from educational institutions. After the pandemic, the virtual model of education and training became a trend. The students and teachers are also more used to this trend which is giving more opportunities to both learners and instructors. One of the notable benefits of virtual teaching and learning platform is that it provides a flexible environment to gain knowledge, skills, and attitude simultaneously along with formal off-line education. From the earlier studies it is found that the majority of studies have focused on traditional, offline training methods and only a few studies have focused on virtual training. Therefore, the present study examined the effectiveness of virtual training using the Kirkpatrick model. For this purpose, a research instrument based on the Kirkpatrick model was constructed and distributed among the UG and PG students in Mangalore City. A total of 143 responses were collected, of which 132 were completed responses and all of them were considered for analysis. Descriptive statistics and one sample t-test are employed to analyse and interpret the data. The findings revealed that virtual training is more effective compared to traditional and offline training methods. Henceforth, the training and education provided through virtual platforms made significant contributions to the employability of youngsters.

Keywords: Evaluation; Information technology; Kirkpatrick; Online training; Post-COVID; Training effectiveness

1. Introduction

Teaching and training through online tools were used by most of the (HEIs) Higher Education Institute worldwide during COVID-19 to cater to the needs of students who stay far away from universi-

*CORRESPONDING AUTHOR:
Abhishek N, Institute of Management and Commerce, Srinivas University, Mangalore, 574146, India; Email: abhishekalmighty93@gmail.com

ARTICLE INFO
Received: 4 August 2023 | Revised: 16 September 2023 | Accepted: 19 September 2023 | Published Online: 8 October 2023
DOI: https://doi.org/10.30564/mmpp.v5i4.5361

CITATION
Suraj, N., Abhishek, N., 2023. Examining the Effectiveness of Virtual Training under the Kirkpatrick Model: A Post-COVID Study. Macro Management & Public Policies. 5(4): 1-10. DOI: https://doi.org/10.30564/mmpp.v5i4.5361

ties/colleges. After the pandemic, the virtual model of education and training became a trend. The students and teachers are also more used to this trend which is giving more opportunities to both learners and instructors. One of the notable benefits of a virtual teaching and learning platform is that it provides a flexible environment to gain knowledge, skills, and attitude simultaneously along with formal off-line education.

On the other hand, the efficiency of HR functions including training is more observed during the pandemic period and if the organizations adopt virtual techniques to teach and train their prospective learners and employees, the firm may enjoy more competitive advantage [1]. In the same way, educational organizations are also required to integrate technology to enhance their competitive advantage and that directly influences the employability of outgoing UG and PG students [2,3]. In this paper, an attempt has been made to assess the perceived effectiveness of virtual training and education among outgoing graduates under the Kirkpatrick model.

2. Literature review

To determine the research gap, an extensive literature survey has been made through an online search environment by using various keywords. A total of 260 research articles have been found on predetermined keywords of which 87 were more relevant to the current title. The important earlier literature and their summaries are presented below.

According to Malik et al. [4], training is essential to establishing a two-handed context for implementing various innovations in the healthcare sectors, particularly in poor nations. According to Nyathi [5], the HR (Human Resource) function becomes a strategic partner to assist firms in taking strategic initiatives, concentrating on the tasks at hand, and adding value. Ishaq et al. [6] centered their study on the push factors for employee economic development as well as cultural variations in the links between HRM-CSR (Human Resource Management-Corporate Social Responsibility) performances. The empirical study on the "HRM and performance" disputes over the previous ten years [7], and "demonstrates evidence that HRM does matter" [8-11]. Sadly, the connections are frequent.

According to Priyashantha [12], the adoption of E-HRM (Electronic Human Resource Management) and the outcomes it produces are influenced by the aim, perceived effectiveness, effort and performance expectations, social influence, and support for communication technology. Nyathi [5] put up an integrated model that improves the utilization of E-HRM and its effects. The six dimensions of the dark side of HRM, according to Bhel et al. [13], can be investigated and used in future studies with the PROMPT (Proactive Recruitment of Multi-cultural Professionals for Tomorrow) model. According to Kurni et al. [14], training and development had a substantial impact on the organization's performance, productivity, and financial return. According to Bondarouk et al. [15], the term "E-HRM" refers to the combination of HRM and IT (Information Technology) that is intended to benefit specific managers and employees.

By analyzing the perceptions of a split sample of senior managers in Singapore, Zhang et al. [16] concluded that there was a vacuum in the research. It highlights an intriguing disconnect between their claims and the realities of their performance management systems and offers ideas for future investigation. In their work, Deaton [17] drew on critical realism philosophy to explain precisely why the scientific' approach favours under-theorization and lacks explanatory power and why the proposed solution is ineffective.

HRM integration is both necessary and somewhat sufficient for HRM performance [18]. To create a systems perspective on comparative human resource management. Mear et al. and James [19,20] identified a set of high-performance HRM practices that are beneficial for innovation and motivation that are based on the subsidiarity principle of institutional design and place a strong emphasis on education and training. These practices enable businesses to give employees more individual responsibility and decision-making authority, increasing employee motivation and productivity. Garengo et al. [21] noted four

themes and an increase in the number of publications on human resource management in performance measurement and management. According to Abdul et al. [22], there are both variations and similarities among the public agencies' adoption of HRM strategies that support innovation.

According to Shafaei et al. [23], green HRM management positively correlates with an organization's environmental performance at the organizational level. Organizational environmental culture is also positively associated with green HRM. Employee turnover, as defined by Marler et al. [24], is equally important because it enables the integration of the numerous themes found. According to Ludwikowska [25], the better the correlation between servant leadership and job performance, the more employee-focused human resource policies there are. According to Sabiu et al. [26], the EC can mediate a performance appraisal. According to Iqbal et al. [27], AM, lean manufacturing, and supporting management and infrastructure strategies all improve a company's performance. Managers should continuously adjust the organizational context as the business advances in the CI learning process [28].

The novel HRM scale is internally consistent and distinct from traditional HRM indicators [29]. The HRM bundles, HRM practices, and HRM activities within show how a gentler approach to managing employees can be applied during a crisis [30]. Al-Alawi et al. [31] suggest a model for DT adoption based on seven elements that were taken from the literature review. Three social e-HRM configurations discriminate between various goals for employing SM in HRM: non-use, relational use, and extended relational use [32]. Effective HRC can be supported by HRM through a combination of thorough education and training, empowerment, and incentives supported by a suitable HR system [33].

Online data represent a naturally occurring source of behavioural data collected in real time without the interference of researchers or the effects of retrospective bias [34]. According to Benuyenah et al. [35], for HR courses to be relevant, they must put a greater emphasis on professional work-based abilities that are relevant to the modern workplace and restructure exam formats to reflect the competencies needed for the HR profession. The course appeared to have positive effects on student engagement, learner autonomy, connection of learning to real-world situations, and flexibility [36].

According to Przytuła et al. [37], HR procedures are significantly impacted by Industry 4.0. Although HRMS has been linked to product innovation, more proof is required to assist process innovation [38]. An analysis of the available HR literature for SMEs by Ghassemieh et al. [39] presents a decision-making framework to assist SMEs in selecting a cost-effective HR strategy, outlining a variety of possibilities from hiring the HR department to outsourcing and electronic HR (EHR). Amorin et al. [40] found that the attitude of HR professionals was receptive, responding to organizational leadership with minimal commitment to the changing circumstances. According to Qamar et al. [41], developing AI-based technology for use in HR operations is necessary.

Technology is the giant today in all the corner points of life of the human being. Many organizations moving from traditional training towards virtual training because of their fruitfulness in enhancing the overall efficiency and competitiveness of students [42]. A study by Guimond et al. [43] highlighted the challenges faced by higher education institutes during placement programs due to the lack of virtual training and capability of students. Another study by Anastasiu et al. [44] stressed the significance of bridging the gap between academic curricula and market needs and they also suggested that virtual techniques are more suitable to develop the same. From the literature review, it is found that the majority of studies have focused on offline and online training during the non-pandemic period, therefore, the present study is intended to analyse the *Effectiveness of Virtual Training in the post-COVID-19 period Using the Kirkpatrick Model*.

3. Theoretical background

Virtual platform plays a prominent role in the effectiveness of virtual training programs during the

pandemic [45]. Online learning support applications such as the use of teleconferences or video call applications, such as WhatsApp, Zoom, Google Meet, and Teach Mint, etc. were supported unimaginably [46]. The use of online learning technologies has helped to preserve the educational infrastructure even during impossible times [47]. There has been increased awareness of the importance of implementing blended learning [48]. The future potential of blended learning will advocate for developing an integrated framework and curriculum for architecture education in India [49]. The future blended model of training and education should be based on more effective training models like the Kirkpatrick method which is focused on four-level training approach (see **Figure 1**). In addition, the inputs from these models are to be included in virtual education and training platform to eradicate the differences that exist between online and offline mode of training and education.

Figure 1. Kirkpatrick training evaluation model.

Source: Kirkpatrick model.

4. Methods

The present study followed the mixed method of research design which includes both quantitative and qualitative approaches. The qualitative method is used to finalise the questionnaire and the quantitative method is employed for the further process of collected data.

The study is both a qualitative and quantitative nature. This study adopted survey research in an educational institution. The research instrument was constructed based on the Kirkpatrick method. The Kirkpatrick model is one of the best models applied in most training institutions to evaluate the effectiveness of training. Therefore, the study was based on both primary and secondary data. The primary data was collected through a structured questionnaire to study the views of outgoing UG and PG students.

The secondary data was collected from various published sources such as reports, case studies, journal articles, books, magazines etc.,

The instrument contains 13 core items designed on a 5-point Likert-type rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). These items were based on the Kirkpatrick model of the training evaluation model. To test the internal consistency of the research instrument reliability statistics were performed, the Cronbach's Alpha based on standardized items was 0.913 which indicates the internal consistency of the research instrument was excellent.

The study distributed questionnaires to 150 students of which 143 responses were collected. Of the collected responses 132 are completed and all of them were considered for the analysis. Respondents consist of 65 (49.2%) male students and 67 (50.8%) female students.

The students are from the Commerce and Management discipline of which 62 belong to UG-Commerce, 11 belong to UG-Management, 2 belong to PG-Commerce, and 57 belong to PG-Management. Most students (97%) are experienced in online education and training. 35.6% of students did not like the online session and 64.4% liked the online session. 55.3% of students have gained online education and training through the Teachmint application, 31.1% of students have acquired education and training through the Google Meet application and 13.6% have experienced it through the Zoom application.

5. Results and discussion

To analyze the perceived effectiveness of virtual training among outgoing UG and PG students under the Kirkpatrick model during the post-pandemic period, a one-sample t-test at a 5% significance level is employed.

The results revealed that the trainee's perception

of the effectiveness of online training was positive and statistically significant which is indicated in **Table 1**. Their *reaction* toward virtual training was also positive because they liked online sessions. The major reason for this is that the session was of optimum duration, more responsive and they also have positive opinions on the trainers' style of delivery of training. These findings are consistent with the outcome of the studies [50-52].

Regarding the *learning* aspect of virtual training, they agreed that they have gained the expected knowledge and skills. Further, they also learned the expected contents. In addition, they strongly agreed that the trainer was knowledgeable in all the topics covered in virtual training. This outcome supports the arguments made by many authors [53-55].

Regarding the *behavior* parameter, the trainees agreed that they could take up training sessions with their teammates after the completion of virtual training. They also strongly agreed that they observed that the relevant skills and knowledge were used by the trainer during virtual sessions. Further, they specifically agreed that they have found positive differences in their skills after the virtual training program. This is also on par with discussions made by many authors [56,57].

Finally, concerning the *result* parameter, the trainees strongly agreed that they have observed the benefit of virtual training during their internship. The majority of the trainees strongly agreed that they had completed the assigned work in the internship as per the expectation. In addition, they also gained recognition during internships from their supervisors. This indicates the effectiveness of virtual training in an optimistic way. This finding is also consistent with the observations made by various studies [58-60].

6. Conclusions

It is not just the pandemic that benefited the virtual platform for teaching but also the situations like floods, droughts, and other natural calamities were one of the reasons to switch over to online learning, where now students can cope with and learn even

Table 1. Effectiveness of virtual training during the post-pandemic period under the Kirkpatrick model.

Parameters	Questions	Empirical results
Reaction: It measures whether learners find the training engaging, favourable, and relevant to their jobs.	Did you like the online session?	Overall Trainees' perception of Significantly positive (M = 3.7860; SD = 0.625; t = 14.435; P < 0.05)
	The session was of adequate length.	
	The teacher was responsive.	
	The teacher's style and delivery were effective.	
Learning: It measures whether learners acquired the intended knowledge, skills, attitude, confidence, and commitment from the training.	The teacher was knowledgeable and reached the trainees' expectations.	Overall Trainees' perception of Significantly positive (M = 3.702; SD = 0.739; t = 10.909; P < 0.05)
	Have you learned what was intended to be taught?	
	The teacher was knowledgeable in all topics covered.	
Behaviour: It assesses the behavioural changes and makes it possible to know not only whether the skills were understood, but also logistically possible to use the skills in the workplace.	Will you be able to take up sessions for your teammates?	Overall Trainees' perception of Significantly positive (M = 4.000; SD = 0.698; t = 16.437; P < 0.05)
	Were the relevant skills and knowledge used?	
	Did you find any difference in your skills?	
Results: It defines goals, measures results and identifies areas of notable impact.	Did you find the virtual training useful during the internship?	Overall Trainees' perception of Significantly positive (M = 3.810; SD = 0.752; t = 12.369; P < 0.05)
	Were you able to complete the work as per their expectation?	
	Did you gain any recognition in the internship?	
Overall Effectiveness of Virtual Training	The majority of trainees positively agreed that virtual training is effective during the post-pandemic period (M = 3.827; SD = 0.621; t = 15.189; P < 0.05).	

Source: Authors compiled.

in these difficult situations without any pause for their studies through online platforms. Hence, it is necessary to make use of a "Blended" approach of both online and face-to-face learning in teaching which is going to be the future of education. The study observed the effectiveness of virtual training programs among UG and PG students in India using the Kirkpatrick model. Based on the results, this study concludes that virtual platform plays a vital role in enhancing the effectiveness of training programs among graduates. Henceforth, the training and education provided through virtual platforms made significant contributions to the employability of youngsters. The study also recommends that corporate leaders adopt the virtual or blended model of training for their employees to trade-off between costs and benefits. The limitation of this study is that it is considered a private institution, which does not allow generalization concerning the effectiveness of virtual training programs across all higher education institutions in India. Therefore, future research may focus on these aspects. Further, the study contributes to the existing literature in the area of virtual training in a significant way as this study focuses on the effectiveness of virtual training and education among outgoing UG and PG students. Further, the HEIs may adopt the virtual education and training pedagogy to make future employees more efficient from the college stage itself.

Ethical Aspects

The study followed all ethical aspects as per COPE guidelines and Helensky declaration. Respondents were informed and given consent before collecting data. The research instrument and ethical issues involved in this study are reviewed and approved by the institutional review board of Srinivas University, Mangalore, India (No.126;16/05/2023).

Conflict of Interest

There is no conflict of interest.

References

[1] Bashir, A., Bashir, S., Rana, K., et al., 2021. Post-COVID-19 adaptations; the shifts towards online learning, hybrid course delivery and the implications for biosciences courses in the higher education setting. Frontiers in Education.

[2] Rabanal, M.G., Blanco, A.A. (editors), 2022. Virtual service-learning: A tool to improve students' skills training and employability. 15th Annual International Conference of Education, Research and Innovation; 2022 Nov 7-9; Seville, Spain. p. 1274-1279.

[3] Singh, M., Gustafson, L., Adcock, A., et al. (editors), 2022. Revisiting weakly supervised pre-training of visual perception models. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition; 2022 Jun 18-24; New Orleans, LA, USA. p. 804-814.

[4] Malik, A., Boyle, B., Mitchell, R., 2017. Contextual ambidexterity and innovation in healthcare in India: The role of HRM. Personnel Review. 46(7), 1358-1380.

[5] Nyathi, M., 2022. The effect of electronic human resource management on electronic human resource management macro-level consequences: The role of perception of organizational politics. African Journal of Economic and Management Studies.
DOI: https://doi.org/10.1108/AJEMS-04-2022-0168

[6] Ishaq, M.I., Sarwar, H., Franzoni, S., et al., 2023. The nexus of human resource management, corporate social responsibility and sustainable performance in upscale hotels: A mixed-method study. International Journal of Emerging Markets.
DOI: https://doi.org/10.1108/IJOEM-04-2022-0714

[7] Huntsman, D., Greer, A., Murphy, H., et al., 2022. A serial mediation model exploring the impact of high performance human resource practices on public sector performance through intermediate employee attitudes. International Journal of Public Administration. 1-16.

[8] Huselid, M.A., 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal. 38(3), 635-672.

[9] Lewis, J.L., Wimberg, J., Kinuthia, W., et al., 2003. Distance learning faculty development workshop using the ADDIE model. Proceedings of SITE 2003—Society for Information Technology & Teacher Education International Conference. Association for the Advancement of Computing in Education (AACE): Waynesville. pp. 382-383.

[10] Tran, T.Q., Scherpbier, A., Van Dalen, J., et al., 2012. Teacher-made models: The answer for medical skills training in developing countries?. BMC Medical Education. 12, 1-6.

[11] Afzal, B., Rehman, S.S.F., Mehboob, S.A.A., 2010. Role of leadership in training and development. Global Journal of Management and Business Research. 10(7), 75-81.

[12] Priyashantha, K.G., 2023. Disruptive technologies for human resource management: A conceptual framework development and research agenda. Journal of Work-Applied Management. 15(1), 21-36.
DOI: https://doi.org/10.1108/JWAM-10-2022-0069

[13] Behl, A., Pereira, V., Varma, A., et al., 2022. Guest editors' overview essay: Exploring the dark side of electronic-human resource management: towards a new PROMPT model. International Journal of Manpower. 43(1), 1-11.
DOI: https://doi.org/10.1108/IJM-04-2022-560

[14] Kurni, M., Mrunalini, M., Saritha, K., 2021. Deep learning techniques for social media analytics. Principles of social networking: The new horizon and emerging challenges. Springer Singapore: Singapore. pp. 413-442.

[15] Bondarouk, T., Ruël, H., 2010. Dynamics of e-learning: Theoretical and practical perspectives: Introduction to special issue. International Journal of Training and Development. 14(3), 149-154.

[16] Zhang, P., Li, N., Jiang, Z., et al., 2019. An agent-based modeling approach for understanding the effect of worker-management interactions on construction workers' safety-related behaviors. Automation in Construction. 97, 29-43.

[17] Deaton, A., 2010. Instruments, randomization, and learning about development. Journal of Economic Literature. 48(2), 424-455.

[18] Blom, R., Voorn, B., Borst, R.T., 2022. HRM autonomy, integration and performance in government agencies: Tests of necessity and sufficiency. Public Management Review. 1-19.
DOI: https://doi.org/10.1080/14719037.2022.2145348

[19] Mear, F., Werner, R.A., 2020. Subsidiarity as secret of success:"Hidden Champion" SMEs and subsidiarity as winning HRM configuration in interdisciplinary case studies. Employee Relations: The International Journal. 43(2), 524-554.
DOI: https://doi.org/10.1108/ER-03-2020-0141

[20] Begin, J.P., 1992. Comparative human resource management (HRM): A systems perspective. International Journal of Human Resource Management. 3(3), 379-408.
DOI: https://doi.org/10.1080/09585199200000156

[21] Garengo, P., Sardi, A., Nudurupati, S.S., 2022. Human resource management (HRM) in the performance measurement and management (PMM) domain: A bibliometric review. International Journal of Productivity and Performance Management. 71(7), 3056-3077.
DOI: https://doi.org/10.1108/IJPPM-04-2020-0177

[22] Abdul Ghani Azmi, I., Hashim, J., 2022. Do HRM practices facilitate innovation? A qualitative study in a developing country. Innovation & Management Review. 19(4), 368-381.
DOI: https://doi.org/10.1108/INMR-09-2020-0122

[23] Shafaei, A., Nejati, M., Yusoff, Y.M., 2020. Green human resource management: A two-study investigation of antecedents and outcomes. International Journal of Manpower. 41(7), 1041-1060.

[24] Marler, L.E., Vardaman, J.M., Allen, D.G., 2021. Human resource management in family firms: Review, integration, and opportunities for future research. Research in Personnel and Human Resources Management. 39, 175-201.
DOI: https://doi.org/10.1108/S0742-73012021 0000039006

[25] Ludwikowska, K., 2022. Employee-oriented human resource policy as a factor shaping the influence of servant leadership on job performance. International Journal of Productivity and Performance Management.
DOI: https://doi.org/10.1108/IJPPM-09-2021-0525

[26] Sabiu, M.S., Ringim, K.J., Mei, T.S., et al., 2019. Relationship between human resource management practices, ethical climates and organizational performance, the missing link: An empirical analysis. PSU Research Review. 3(1), 50-69.
DOI: https://doi.org/10.1108/PRR-12-2016-0022

[27] Iqbal, T., Jajja, M.S.S., Bhutta, M.K., et al., 2020. Lean and agile manufacturing: Complementary or competing capabilities?. Journal of Manufacturing Technology Management. 31(4), 749-774.
DOI: https://doi.org/10.1108/JMTM-04-2019-0165

[28] Galeazzo, A., Furlan, A., Vinelli, A., 2021. The role of employees' participation and managers' authority on continuous improvement and performance. International Journal of Operations & Production Management. 41(13), 34-64.
DOI: https://doi.org/10.1108/IJOPM-07-2020-0482

[29] Koster, F., Benda, L., 2020. Innovative human resource management: Measurement, determinants and outcomes. International Journal of Innovation Science. 12(3), 287-302.
DOI: https://doi.org/10.1108/IJIS-03-2020-0027

[30] Adikaram, A.S., Naotunna, N.P.G.S.I., Priyankara, H.P.R., 2021. Battling COVID-19 with human resource management bundling. Employee Relations: The International Journal. 43(6), 1269-1289.
DOI: https://doi.org/10.1108/ER-08-2020-0390

[31] Al-Alawi, A.I., Messaadia, M., Mehrotra, A., et al., 2023. Digital transformation adoption in human resources management during COVID-19. Arab Gulf Journal of Scientific Research.
DOI: https://doi.org/10.1108/AGJSR-05-2022-0069

[32] Martini, M., Cavenago, D., Marafioti, E., 2021. Exploring types, drivers and outcomes of social e-HRM. Employee Relations: The International Journal. 43(3), 788-806.
DOI: https://doi.org/10.1108/ER-10-2019-0404

[33] Molitor, M., Renkema, M., 2022. Human-robot collaboration in a smart industry context: Does hrm matter?. Smart industry—better management. Emerald Publishing Limited: Bingley. pp. 105-123.
DOI: https://doi.org/10.1108/S1877-63612022 0000028008

[34] Platanou, K., Mäkelä, K., Beletskiy, A., et al., 2017. Using online data and network-based text analysis in HRM research. Journal of Organizational Effectiveness: People and Performance. 5(1), 81-97.
DOI: https://doi.org/10.1108/JOEPP-01-2017-0007

[35] Benuyenah, V., Boukareva, B., 2018. Making HRM curriculum relevant—a hypothetical practitioners' guide. Journal of Work-Applied Management. 10(1), 93-100.
DOI: https://doi.org/10.1108/JWAM-09-2017-0026

[36] KK, S., Maskari, A.A., 2019. Student engagement in blended learning instructional design: An analytical study. Learning and Teaching in Higher Education: Gulf Perspectives. 15(2), 61-79.

[37] Przytuła, S., Rank, S., Tracz-Krupa, K., 2022. Ambidexterity as the response of smart industry 4.0—Towards better HR practices. Smart industry—better management. Emerald Publishing Limited: Bingley. pp. 51-67.
DOI: https://doi.org/10.1108/S1877-63612022 0000028006

[38] Easa, N.F., Orra, H.E., 2021. HRM practices and innovation: An empirical systematic review. International Journal of Disruptive Innovation in

Government. 1(1), 15-35.

[39] Ghassemieh, G., Thach, L., Gilinsky, A., 2005. Does my business need a human resources function? a decision-making model for small and medium-sized firms. New England Journal of Entrepreneurship. 8(2), 25-36.
DOI: https://doi.org/10.1108/NEJE-08-01-2005-B003

[40] de Amorim, W.A.C., da Cruz, M.V.G., Sarsur, A.M., et al., 2021. HRM in Brazil: An institutional approach. Revista de Gestão. 28(1), 84-99.
DOI: https://doi.org/10.1108/REGE-08-2020-0074

[41] Qamar, Y., Agrawal, R.K., Samad, T.A., et al., 2021. When technology meets people: The interplay of artificial intelligence and human resource management. Journal of Enterprise Information Management. 34(5), 1339-1370.
DOI: https://doi.org/10.1108/JEIM-11-2020-0436

[42] Reed, S., Zolna, K., Parisotto, E., et al., 2022. A generalist agent. arXiv preprint arXiv:2205.06175.

[43] Guimond, J.P., Kiss, J., Consuelo, R., et al., 2023. Enhancing employability for autistic graduates: Using TRIZ theory to design virtual reality solutions for fostering inclusive communications in workplace environments. Global Journal of Human-Social Science: H Interdisciplinary. 23(4).

[44] Anastasiu, L., Anastasiu, A., Dumitran, M., et al., 2017. How to align the university curricula with the market demands by developing employability skills in the civil engineering sector. Education Sciences. 7(3), 74.

[45] Ganiyu, I.O., Atiku, S.O., Van der Byl, K., 2022. An evolution of virtual training: Implications for talent development in the post-pandemic period. Development and Learning in Organizations: An International Journal. 37(2), 10-13.

[46] Xie, X., Lu, Q., Herrera, M., et al., 2021. Does historical data still count? Exploring the applicability of smart building applications in the post-pandemic period. Sustainable Cities and Society. 69, 102804.

[47] Al-Fodeh, R.S., Alwahadni, A.M., Abu Alhaija, E.S., et al., 2021. Quality, effectiveness and outcome of blended learning in dental education during the Covid pandemic: Prospects of a post-pandemic implementation. Education Sciences. 11(12), 810.

[48] Brauweiler, H., Yerimpasheva, A., 2021. Moving to blended learning in the post-pandemic era. The impact of COVID-19 on accounting, business practice and education (1st ed.). Publishing House of Wroclaw University of Economics and Business: Wroclaw. pp. 104-120.

[49] Varma, A., Jafri, M.S., 2020. COVID-19 responsive teaching of undergraduate architecture programs in India: Learnings for post-pandemic education. Archnet-IJAR: International Journal of Architectural Research. 15(1), 189-202.

[50] Kirkpatrick, D.L., Craig, R.L., 1970. Evaluation of training [Internet]. Available from: https://files.eric.ed.gov/fulltext/ED057208.pdf#page=41

[51] Fleetwood, S., Hesketh, A., 2006. HRM-performance research: Under-theorized and lacking explanatory power. The International Journal of Human Resource Management. 17(12), 1977-1993.
DOI: https://doi.org/10.1080/09585190601041026

[52] Phillips, J.J., Phillips, P.P., 2016. Handbook of training evaluation and measurement methods. Routledge: London.

[53] Gannon-Leary, P., Fontainha, E., 2007. Communities of practice and virtual learning communities: Benefits, barriers and success factors. Barriers and Success Factors. eLearning Papers. (5).

[54] Stricker, D., Weibel, D., Wissmath, B., 2011. Efficient learning using a virtual learning environment in a university class. Computers & Education. 56(2), 495-504.

[55] Torres Martín, C., Acal, C., El Homrani, M., et al., 2021. Impact on the virtual learning environment due to COVID-19. Sustainability. 13(2), 582.

[56] Sunardi, O., Widyarini, M., Tjakraatmadja, J.H., 2012. The impact of sales forces training program to employees behaviour styles (a quasi-experimental case study in a medium sized enterprise). Procedia Economics and Finance. 4, 264-273.

[57] Hassan, M., Thomson, K.M., Khan, M., et al., 2017. Behavioral skills training for graduate students providing cognitive behavior therapy to children with autism spectrum disorder. Behavior Analysis: Research and Practice. 17(2), 155.

[58] Reson, L.M., Lydia, M.J., 2012. Towards a results-oriented public service in Kenya: The modern human resource management perspective. International Journal of Business and Social Science. 3(21).

[59] Choi, M., Yoon, H.J., 2015. Training investment and organizational outcomes: A moderated mediation model of employee outcomes and strategic orientation of the HR function. The International Journal of Human Resource Management. 26(20), 2632-2651.

[60] Piwowar-Sulej, K., 201. Achieving HR function consistency as a challenge for HR practitioners in project-oriented organizations. Electronic Journal of Knowledge Management. 15(3).

BILINGUAL PUBLISHING GROUP

Macro Management & Public Policies

https://journals.bilpubgroup.com/index.php/mmpp

ARTICLE

Precautionary Principles of Sustainability versus Promotion of the Ease of Doing Business in the Proposed EIA Regulation in India: A Critical Analysis and Application of an Ex-Ante Framework to Review the Regulation

A.K.A. Rathi

Faculty of Planning and Public Policy, CEPT University, Ahmedabad, 380059, India

ABSTRACT

The tenets of environmental policy evolved in India and how precautionary principles of sustainability are sidelined in the draft EIA regulation 2020 are analyzed. The emphasis on exempting several categories of projects from the EIA requirements and public consultation, standardization of sector-specific terms of reference and environmental clearance conditions, and decentralization of the decision-making to simplify and fast-track the environmental clearance procedure for development projects is apparent. The list of projects/activities requiring prior environmental clearance and the procedures reveal that promoting the ease of doing business scores over precautionary principles. Efforts to increase the effectiveness and improve transparency in monitoring the implementation of environmental clearance conditions are visible. Still, the prime issues of improving the efficiency and efficacy of the EIA framework and institutional reforms in the EIA system need to be earnestly addressed. The evaluation using an ex-ante framework unveils the areas needing meticulous attention to revamp the EIA regulation.

Keywords: EIA effectiveness; EIA follow-up; EIA framework; EIA policy; EIA system; Scoping

1. Introduction

Environmental impact assessment (EIA) is a dynamic process because the experience of its implementation is often used along with new knowledge to mold the future framework of the EIA for sustaina-

*CORRESPONDING AUTHOR:
A.K.A. Rathi, Faculty of Planning and Public Policy, CEPT University, Ahmedabad, 380059, India; Email: drakarathi@gmail.com

ARTICLE INFO
Received: 21 July 2023 | Revised: 13 September 2023 | Accepted: 14 September 2023 | Published Online: 10 October 2023
DOI: https://doi.org/10.30564/mmpp.v5i4.5847

CITATION
Rathi, A.K.A., 2023. Precautionary Principles of Sustainability versus Promotion of the Ease of Doing Business in the Proposed EIA Regulation in India: A Critical Analysis and Application of an Ex-Ante Framework to Review the Regulation. Macro Management & Public Policies. 5(4): 11-35. DOI: https://doi.org/10.30564/mmpp.v5i4.5847

bility. Legal reform processes periodically target EIA systems to strengthen and improve them further [1]. The issue of development is always at the core of a country's policy with low- or moderate-income levels, and EIA is generally considered a stumbling block to investments in development projects, even though the *ex-ante* evaluation of environmental issues helps ensure that the economic growth is environmentally sustainable [2-4]. A declared goal of many governments internationally appears to make environmental and other impact assessments faster and more straightforward and put them 'on a fast track' [5]. However, EIA scholars apprehend that such changes and so-called "refinements", "reforms", or "simplification" affect accomplishing goals and benefits of the EIA [6-8]. Strategic environmental assessment is generally recommended to address developmental concerns at the levels of policy, plan, and program to determine the available resources and options and to assess environmental and social impacts [9-14]. Environmental policies, including EIA-related regulations in developing countries, are primarily driven by international environmental organizations, globalization, international development banks, and the international scientific community [15,16], irrespective of the level of backing from the domestic players and the scale of environmental degradation taking place. An exhaustive review of the origin and development of EIA and current issues in EIA, viz. theory, practice, and effectiveness [17], are documented. Earlier, a detailed review of the literature on the evaluation of EIA systems [18] was also reported. The key areas identified [19] to improve the project-level EIA process, viz. scoping, determination of the significance of impacts, EIA review, and monitoring and follow-up, are discussed [20] in the Indian context. EIA practices in India and weaknesses in the regulatory framework and its implementation are reported [20-23].

The Directive Principles of the State Policy under the Indian Constitution [24], Article 48A states that "the state shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country", and Article 51(A)(g) states that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures." The Environment (Protection) Act 1986, an 'umbrella' legislation, was enacted in the aftermath of the Bhopal disaster to implement the decisions of the United Nations Conference on the Human Environment related to the protection and improvement of the human environment and the prevention of hazards to human beings, other living creatures, plants, and property. The Act empowers the Federal Government to issue directions and notify regulations from time to time to achieve the objective. The principal objectives of the National Environmental Policy [25] are the conservation of critical environmental resources, intra-generational equity-livelihood security for the poor, inter-generational equity, integration of environmental concerns in economic and social development, efficiency in environmental resource use, environmental governance, and enhancement of resources for environmental conservation.

In the case of Vellore Citizens Forum [26], the Supreme Court of India observed that the "precautionary principle" and the "polluter pays principle" are part of the environmental law of the country. These principles are essential features of sustainable development. The principles, viz. "environmental protection is an integral part of the development process" and "the precautionary approach", among others, guided the EIA framework in India, which has evolved over the last three decades. While river valley projects came under the ambit of examination from an environmental angle in 1977, followed by major public sector projects, environmental approval in India was mandated [27] for the specified projects exceeding specific investment thresholds. The EIA regulation is not a full-fledged Act passed by the Indian parliament. Instead, it is notified by the Ministry, drawing powers under the Environmental (Protection) Act, 1986. It is a federal regulation and a two-tier mechanism is followed for its implementation at the federal and state levels. Based on the experience gained in implementing the EIA framework, the notification was reengineered in the form of a more

comprehensive regulation [28] having distinct features such as a) introduction of screening and scoping for the preparation of EIA reports, b) prescribing timeframe for public consultation and the entire EIA process, c) preparation of rapid EIA reports using the primary baseline data generated over one season or comprehensive EIA reports using the data generated over all the seasons over the year as decided by the authority prescribing terms of reference (TOR) to conduct EIA, and d) a two-tier mechanism for appraisal of EIA reports—category A projects at the federal level and category B projects at the state level and the concomitant decision-making.

2. The objective of the study and methodology

There has been widespread criticism of the draft EIA regulation [29], henceforth referred to as a draft. The concerns include policy weakening for environmental protection [30], diluting the EIA process and encouraging violations [31], reduced regulations and increased exemptions [32], institutionalizing ex post facto clearance [33], reduced space for public consultation, and exemption from public consultation to transboundary projects [34], etc. Environmentalists thus consider it a rubber stamp that legitimizes environmentally degrading projects, given that the rejection rate under the current EIA regime has been almost zero. The principle of the doctrine of non-regression is not adhered to even though the present status of the draft is not known after its validity was extended due to the pandemic. It was translated into regional languages as per the directions of the Delhi High Court. Given that the draft reflects the thinking of the political leadership in the country, an exhaustive and comprehensive investigation was considered necessary to comprehend the tenets of the environmental policy evolved in India and how the precautionary principle is imbibed into the draft vis-a-vis the prevailing regulation [28], which is proposed to be superseded, for environmental protection for next-generation EIA [35].

The methodology used is based on a broad literature review, the comparison and in-depth analysis of the regulatory provisions for the standard stages [36] in the project-level EIA process, viz. screening, scoping, EIA report preparation, public participation, EIA review, decision-making, and EIA follow-up in the draft and the earlier regulations. **Table 1** compares the categorization of projects listed in the schedule of the three EIA notifications issued so far in India—the earlier [27], the prevailing [28], and the draft [29] ones for mandatory environmental clearance. Further, the prevailing and the draft EIA regulations are evaluated using the *ex-ante* framework [35] that was employed to evaluate the impact assessment laws proposed in Canada [37] and Brazil [38]. The original framework consisting of 10 themes is used, but 50 good practice elements, reflecting the breadth of the EIA, are increased to 55 good practices to suit the Indian context. Three good practices are added under scoping- differentiating greenfield and brownfield projects, specifying cumulative effects assessment and meaningful risk assessment integrated with the environmental management program (EMPg). A good practice is modified to integrate biophysical and social impacts. Two good practices are added under impact assessment, and EIA report preparation-justification of criteria to select impact identification methods and implementable EMPg. The need for additional good practices arose from the SWOT analysis of the Indian EIA system. The findings and evaluation of the good practice elements in the EIA practice are summarized in **Table 2**. The 0-3 scale is used to evaluate the extent to which the good practice criteria are met in the regulations; 0: not addressed, 1: addressed with major inadequacies, 2: addressed with minor adequacies, and 3: strongly addressed.

3. Findings from the critical examination of the draft EIA regulation and discussion

The draft EIA regulation was framed to consolidate numerous amendments issued from time to time to the prevailing notification, and directions and orders of the High Courts, National Green Tribunal, and Supreme Court besides incorporating the imple-

mentation experience. The distinct features of the draft regulation include a) defining the terms used, b) introducing a third-tier mechanism at the district level for the specified mining projects, and empowering the local bodies, viz. municipalities, development authorities, and district panchayats to examine the specified projects of buildings and construction; c) increasing the threshold limits of some projects of category A; d) carving out a new category of projects, B2 from the earlier category B and encompassing some medium-scale enterprises into it; e) removing several projects including specific small- and micro-scale industries from the purview of mandatory EIA clearance; f) exempting some projects including expansion/modernization of the existing projects, especially those not requiring any additional land acquisition, from the mandatory public consultation; g) more transparent and improved mechanism of post-environmental clearance (EIA follow-up); etc. Like the prevailing regulation, there is reliance on the pre-feasibility reports for project-related information. The EIA consultants also rely on the pre-feasibility reports for the project description, mass balance, water balance, etc. even though the students of project management understand that the pre-feasibility report of a project contains broader aspects of the project and financials and detailed and precise information is generally not captured at that early stage of the project lifecycle. The draft overlooks that legal instrument is the main influencing factor for the EIA effectiveness, and there exists a complex interaction between the elements related to the EIA system itself, such as the mandatory requirement of conducting EIA, and governance mechanism and its application in practice, i.e. the quality of the environmental assessment, appraisal mechanism, and follow-up [39]. The standard stages of the EIA process are discussed below concerning the distinct features of the draft.

3.1 Screening

The findings on the unique features of the screening process in the draft are discussed below:

Schedule of projects requiring prior environmental clearance

1) Threshold limits for category A projects of mining, river valley hydroelectric power generation, irrigation, thermal power plants using petroleum coke, diesel, and other fuels, mineral beneficiation, and distilleries are increased.

2) Slurry pipelines for transporting ores, including coal and lignite, are added as category A projects, and lead-acid batteries, excluding assembling and charging of lead-acid batteries and coal tar processing, are treated as category B projects.

3) A new project classification, viz. pelleting, briquetting, and agglomeration, is added under mineral beneficiation. Some activities are added in the existing classification, viz. a) 'cement grinding' to cement, b) 'calcination plants' to coke oven plants, c) 'molasses-based manufacturing and biofuels' to molasses, d) 'expressways' and 'elevated roads' to highways, and e) 'common bio-medical waste treatment' to common hazardous waste treatment, storage and disposal facilities.

4) The aerial ropeway projects are removed from category B projects and split into projects at high altitudes and in the notified ecologically sensitive areas as category A and the others as category B2 projects.

5) Some projects are carved out from category A as category B projects, viz. i) single super phosphate without sulfuric acid manufacture from the chemical fertilizers sector, ii) leather/skin/hide processing without tanning and located within an approved industrial estate, and iii) pesticides (technical) and pesticide-specific intermediates located in the notified industrial estate.

6) Construction and building projects having 20,000-50,000 sq m built-up areas for residential and commercial purposes and 50,000-150,000 sq m for industrial sheds, educational institutions, hostels, and hospitals are reclassified as category B2 projects.

7) Category B2 is carved out from category B1 for specific projects, viz. a) mining in the lease area of less than 25 hectare for minor minerals; b) irrigation for 2,000-10,000 hectare of culturable command area; c) non-toxic secondary metallurgical processing

involving operation of furnaces only having capacity 30,000-60,000 mtpa and located within approved industrial estates, and the medium scale units; d) standalone cement grinding/blending having less than 1million mtpa capacity, all standalone grinding units transporting raw materials and products through rail mode, and the medium scale units; e) chlor-alkali having less than 300 mtpd capacity located within the approved industrial estate; f) petroleum products and petrochemical-based processing medium scale units; g) medium scale units manufacturing synthetic organic chemicals; h) distilleries- country liquor based on Mahuwa flower less than 5 KLD, and the medium scale units; i) integrated paints manufacturing medium scale units; and j) paper manufacturing from waste paper, recovered paper and ready pulp involving processes like deinking, bleaching, decolorizing, and the medium scale units.

8) Several projects get exempted from the provisions of seeking prior environmental clearance, viz.: a) minor irrigation for less than 2,000 hectares; b) micro and small scale units of i) mineral beneficiation, pelleting, briquetting and agglomeration, ii) metallurgical (ferrous and non-ferrous), iii) cement and cement grinding, iv) petroleum products and petrochemical-based processing, v) synthetic organic chemicals, vi) integrated paints manufacturing, and vi) pulp and paper manufacturing; c) authorized recycling units, having furnace capacity less than 30,000 mtpa, standalone rolling mills and forging units of less than 500 mtpd capacity, and secondary processing of all non-toxic metals having capacity less than 5000 mtpa; d) standalone granulation of SSP, neem coating and fortification of fertilizers within the sanctioned capacity; e) products from polymer granules; f) projects/activities involving only a single-stage unit process such as sulfonation, sulfation, or chlorination except nitration; f) paper manufacturing from waste paper, recovered paper and ready pulp not involving deinking, bleaching and decolorizing; g) airstrips not involving bunkering/refueling facility and air traffic control; h) expansion of state highways except in hilly terrain at more than 1000 m above mean sea level, i) maintenance dredging if it formed part of the original project; and j) isolated storage and handling of hazardous chemicals.

9) The provision of maintaining a buffer zone of 10 km from the boundary of the protected areas, critically polluted areas, eco-sensitive areas, and interstate and international borders that were mandated earlier will not apply to locate the projects exempted from the EIA provisions.

10) The projects concerning national defense and security or *involving other strategic considerations* "as determined by the Federal Government will not be treated as category 'A' projects, and information relating to such projects shall not be placed in the public domain".

Project categorization

Like the current regulation, the categorization of projects is based on the project size criteria, not the potentially significant impacts or risks criteria. A large number of projects/activities are exempted from the provisions of the EIA regulation. However, including some new projects, such as slurry pipelines and lead acid batteries, in the list of projects requiring prior environmental clearance, and adding some related activities/projects, such as pelleting, calcination, and common biomedical waste treatment, is a positive sign of adhering to a precautionary approach for environmental protection and should help strengthen the screening stage of the EIA process. But the removal of isolated storage of hazardous chemicals from the purview of environmental clearance appears to be an environmentally retrograde step as the storage of large quantities of petroleum products and other hazardous substances at depots and locations other than the industry and port, especially at isolated locations to facilitate distribution to the consumers has environmental risk potential. Given the incidents of disasters due to major fires at such installations and the transport of toxic emissions over long distances, such projects should be under the mandatory environmental clearance process. Further, the rationale for reclassifying some projects, such as pesticides from category A to B1 and chlor-alkali from category B1 to B2 for the

projects proposed in the notified industrial areas, is difficult to comprehend.

Carving out specific projects, including medium-scale units from category B to B2, and exempting micro- and small-scale projects from seeking mandatory environmental clearance appears to be based on a misplaced premise that there exists a direct correlation between the capital investment in a project, irrespective of project typology, and the potential environmental consequences. Using such a criterion for screening the projects returns the clock to the previous regulation, which mandated environmental clearance based on the investment criterion with some exceptions, as observed in **Table 1**. Many small-scale industries use as well as produce a variety of hazardous and toxic organic chemicals [40,41]. These industries have the potential to cause environmental impacts such as contamination of soil and water resources, air pollution, and environmental risks due to hazardous substances, work practices, improper treatment of wastes, and uncertainties on the ultimate fate of the pollutants in addition to unknown health effects of the chemicals, more so, when a large number of projects are located in a cluster. Moreover, a large number of industries are brought under the folds of micro-, small-, and medium-scale sectors by enhancing the capital investment thresholds and adding the annual sales earnings criteria [42]. There are instances of small-scale and medium-scale organic chemical units producing dyes and intermediates, contaminating hundreds of hectares of land, and polluting the wells even at a distance of 10 km [43]. A project involving a single-stage unit process like sulfonation or chlorination, exempted from the EIA provisions, can pose a significant environmental risk from leakage of hazardous and toxic oleum or chlorine gas from the process, handling, storage, or transportation. There is a well-known disastrous incident of leakage of oleum [44] from a large industry having a sulfonation facility. There are several incidents of chlorine gas leakage and consequences to environmental health even at long distances [45-47]. Thus, exempting projects involving transportation, handling, storage, and manufacture of hazardous chemicals from mandatory environmental clearance, merely based on the scale criteria, disregarding the project typology, defies the precautionary principle approach.

Table 1. Indian EIA regulations on prior environmental clearance.

S No.		1994	2006	2020 (draft)
Extraction of natural resources and power generation				
1a i.	Mining of minerals	√ Major minerals > 5 ha	A: Asbestos mining, >= 50 ha of the mining lease area, asbestos mining B: 5- < 50 ha	A: Asbestos mining, > 150 ha for coal mining, >100 ha for other major and minor minerals B1: <= 150 ha for coal, <= 100 ha for major minerals, > 25-100 ha for minor minerals B2: < 25 ha for mining and clusters of minor minerals
1a ii.	Slurry pipelines for ores, including coal	x	Not specified	A: All projects
1b	Offshore and onshore oil and gas dev and production, including the required infrastructure	√√	A: All projects	A: All projects
1c i.	River valley power generation	√√	A: >= 50 MW hydroelectric power B: >= 25- < 50 MW	A: >= 75MW B1: >= 25- < 75
1c ii.	Irrigation	√√	A: >= 10,000 ha culturable command area B: < 10,000 ha	A: >= 50,000 ha B1: >= 10,000- < 50,000 ha B2: >= 2000- < 10,000 ha

Table 1 continued

S No.		1994	2006	2020 (draft)
1d	Thermal Power generation	√√	A: >= 500 MW coal, lignite, naphtha-based >= 50 MW pet coke, diesel, other fuel-based B: < 500 MW coal, lignite, naphtha-based >= 5- < 50 MW pet coke, diesel, other fuel-based	A: >= 500 MW coal, lignite, naphtha, gas-based >= 100 MW all other fuel-based B1: >= 5- < 500 MW coal, lignite, naphtha, gas-based >= 5- < 100 MW all other fuel-based except biomass and municipal solid non-hazardous waste > 15- < 100 MW biomass and municipal solid non-hazardous waste-based
1e	Nuclear projects and processing of nuclear fuel	√√	A: All projects	A: All projects
Primary processing				
2a	Coal washeries	x	A: >= 1 million tpa coal throughput B: < 1 million tpa coal throughput	A: >= 1 million tpa coal throughput B: < 1 million tpa coal throughput
2b	*Mineral beneficiation	x	A: >= 0.1 million tpa mineral throughput B: < 0.1 million tpa mineral throughput	A: >= 1 million tpa mineral throughput B1: < 1 million tpa mineral throughput *includes chemical processing of ores
2c	*Pelleting, briquetting, agglomeration	x	No separate classification	A: >= 1 million tpa mineral throughput B1: < 1 million tpa mineral throughput
Materials production				
3a	Metallurgical (ferrous and non-ferrous)	√√ Primary metallurgy, mini steel	A: All projects of primary metallurgy, Sponge iron >= 200 tpd, secondary metallurgical processing-all toxic and heavy metals >= 20,000 tpa B: Sponge iron < 200 tpd, secondary metallurgical processing- all toxic and heavy metals < 20,000 tpa, all other non-toxic metals > 5,000 tpa, induction/arc furnaces, cupola furnaces >= 5tph	A: All projects of primary metallurgy, Sponge iron >= 200 tpd, Secondary metallurgical processing- all toxic and heavy metals >= 20,000 tpa B1: Sponge iron < 200 tpd, Secondary metallurgical processing: all toxic and heavy metals < 20,000 tpa, all other non-toxic metals > 5,000 tpa B2: All non-toxic secondary metallurgical processing involving the operation of furnaces only like induction, electric arc, submerged, and cupola with capacity > 30,000- < 60,000 tpa and located within approved industrial estates and medium units.
3b	Cement and *cement grinding	√√	A: >= 1 million tpa capacity B: < 1 million tpa capacity, All standalone grinding	A: >= 1 million tpa capacity B1: < 1 million tpa capacity, > 1 million tpa standalone grinding B2: < 1 million tpa standalone grinding/ blending, all standalone grinding units transporting raw materials and products through rail mode, and medium units
3c	*Lead acid batteries excluding assembling and charging	√√	-	A: none B1: All projects
4a	Petroleum refining	√√	A: all projects	A: all projects
4b i.	Coke oven, *calcination plants	x	A: >= 250,000 tpa B: >= 25,000- < 250,000 tpa	A: >= 250,000 tpa B: >= 25,000- < 250,000 tpa

Table 1 continued

S No.		1994	2006	2020 (draft)
4b ii.	*Coal tar processing	x	-	A: none B1: all projects
4c	Asbestos milling and asbestos-based products	√	A: all projects	A: all projects
4d	Chlor-alkali	√√	A: >= 300 tpd capacity if located outside the notified industrial estate B: < 300 tpd capacity and for location outside the notified industrial estate	A: >= 300 tpd capacity if located outside the approved industrial estate B1: >= 300 tpd capacity if located within the approved industrial estate, < 300 tpd capacity and if located outside the approved industrial estate B2: < 300 tpd capacity if located within the approved industrial estate
4e	Soda ash	x	A: all projects	A: all projects
4f	Leather/ skin/ hide processing	√	A: projects located outside the industrial estate B: projects located within indl estate	A: projects located outside industrial estate B1: projects located within industrial estate B2: projects without tanning if located within an approved industrial estate
Manufacturing/fabrication				
5a	Chemical fertilizers	√√ Except SSP	A: all projects	A: all projects except single super phosphate without sulfuric acid production B1: single super phosphate without sulfuric acid production
5b	Pesticides and pesticide-specific intermediates, excluding formulations	√ Pesticides (Tech)	A: all projects of technical-grade pesticides	A: all projects located outside the approved industrial estate B: all projects located in the approved industrial estate
5c	Petrochemical complex, based on the processing of petroleum and natural gas	√√	A: all projects	A: all projects
5d	Manmade fibers	√√ Rayon	A: rayon B: all others	A: rayon B1: all others
5e	Petroleum products, and petrochemical-based processing, and processes other than cracking and reforming	√√	A: projects located outside notified industrial estate B: projects located in notified industrial estate	A: projects located outside an approved industrial estate B1: projects located in an approved industrial estate B2: medium scale units
5f	Synthetic organic chemicals like dyes and bulk drugs and their intermediates, excluding drug formulations, synthetic rubbers, synthetic organic chemicals, and intermediates	√ Bulk drugs, dyes, MAP, hydrocyanic acid. √√ synthetic rubbers	A: projects located outside notified industrial estate B: projects located in notified industrial estate	A: projects located outside notified industrial estate B1: projects located in a notified industrial estate B2: medium scale units

Table 1 continued

S No.		1994	2006	2020 (draft)
5g	*Distilleries, molasses-based manufacturing, and biofuels	√	A: all molasses-based distilleries, All cane juice/non-molasses-based distilleries >= 30 KLD B: All cane juice/non-molasses-based distilleries < 30 KLD	A: molasses-based distilleries >= 100 KLD, Molasses-based manufacturing like yeast >= 100 tpd, Non-molasses-based distilleries >= 200 KLD B1: molasses-based distilleries < 100 KLD, Molasses-based manufacturing like yeast < 100 tpd, Non-molasses-based distilleries < 200 KLD B2: country liquor based on Mahuwa flower <= 5 KLD, medium scale units
5h	Integrated paints manufacturing	√	A: - B: all projects	A: - B1: all projects B2: medium scale units
5i	Pulp and paper	√√	A: pulp manufacturing, Pulp and paper manufacturing B: paper manufacturing without pulp manufacturing	A: pulp manufacturing, Pulp and paper manufacturing except from waste paper, recovered paper B1: paper manufacturing from waste and recovered paper B2: paper manufacturing from waste paper, recovered paper, ready pulp involving deinking, bleaching, decolorizing, medium-scale units
5j	Sugar	x	A: - B: >= 5,000 tcd cane	A: - B: >= 5,000 tcd cane
Service sectors				
6a	i. LNG terminal involving processing and transportation ii. Oil and gas transportation pipelines passing through national parks, ecologically sensitive areas	√	A: all projects	A: all projects
6b	*Isolated storage and handling of hazardous chemicals	x	A: - B: all projects	Not specified
Physical infrastructure including environmental services				
7a	Airports	√	A: all projects	A: all projects of terrestrial airstrips and water aerodromes for commercial use. Airstrips not involving bunkering/refueling facility, air traffic control exempted.
7b	Shipbreaking and yards	x	A: all projects	A: all projects
7c	Industrial estates/ parks/ complexes/ areas, export promotion zones, special economic zones, etc.	x	A: projects having at least one category A project, projects with > 500 ha area, and housing at least one category B project B: Projects with < 500 ha area and housing at least one category B project, projects with > 500 ha and not housing any project of category A or B	A: projects having at least one category A project, Projects with > 500 ha area and housing at least one category B project B: Projects with < 500 ha area and housing at least one category B project, Projects with > 500 ha and not housing any project of category A or B

Table 1 continued

S No.		1994	2006	2020 (draft)
7d	Common hazardous waste treatment, storage, and disposal facilities	x	A: all integrated facilities having incineration and landfill or incineration alone B: all facilities having landfill only	A: all integrated facilities having incineration and landfill or incineration alone B: all facilities having landfill only, All projects of common bio-medical waste treatment facilities
7e	Ports, harbors, breakwaters, dredging	√√	A: >= 5 million tpa of cargo handling capacity, excluding fishing harbors B: < 5 million tpa of cargo handling capacity and/ or >= 10,000 tpa fish handling capacity	A: >= 5 million tpa of cargo handling capacity (excluding fishing harbors) B: < 5 million tpa of cargo handling capacity and/ or >= 10,000 tpa fish handling capacity
7f	*Highways, Expressways, Elevated roads	√√	A: new national highways, expansion of NH > 30 km, involving the additional right of way > 20 m, involving land acquisition and passing through more than one state B: new state highways, expansion of NH/SH > 30 km, involving the additional right of way > 20 m involving land acquisition	A: new national highways, expressways, and elevated roads, expansion/ widening of NH > 100 km, involving the additional right of way or land acquisition if > 40 m on existing alignments or 60 m on re-alignment/bypasses B1: state highway expansion projects in hilly terrain, above 1000 m AMSL and/or ecologically sensitive areas
7g	Aerial ropeways	x	A: - B: all projects	A: all projects located at an altitude of >= 1000 m, All projects located in notified ecologically sensitive areas B1: - B2: all projects not considered as category A
7h	Common effluent treatment plants	x	A: - B: all projects	A: - B1: all projects
7i	Common municipal solid waste management facility involving landfilling and/or incineration	x	A: - B: all projects	A: - B1: all projects
8a	Building and construction	x	A: - B: >= 20,000 sq m- < 150,000 sq m built-up area/activity area	A: - B1: - B2: >= 50,000 sq m- < 150,000 sq m built-up area/ activity area. Local bodies to stipulate env conditions for projects of built-up of 20-50,000 sq m, and for 50-150,000 sq m built-up industrial sheds, educational institutions and their hostels, and hospitals
8b	Township and area development	x	A: - B: covering an area >= 50 ha and/or >= 150,000 sq m built-up area	A: - B1: Covering area >= 50 ha >= 150,000 sq m built-up area,

Note: √: all projects irrespective of the investment involved, √√: projects involving an investment of more than Rs. 1 billion for new projects and Rs. 500 million for expansion/modernization projects, and x: projects not specified.

It is difficult to understand different built-up area thresholds prescribed for building and construction projects such as residential, commercial, educational, and hospital when the potential impacts of construction are not likely to be much different. The exemption given to the expansion of state highway projects in plains seems to be on a presumption that environmental impacts do not arise from the widening of an existing state highway, even to make it a 4-lane or 6-lane road, and on par with a national highway, overlooking the precautionary principle. While the re-classification of category B ropeway projects proposed at higher altitudes and those in the notified ecological areas as category A projects is in line with the precautionary principle, categorizing other ropeway projects under category B2 appears to be negating it because all the ecologically sensitive areas might not have been notified and even the unnotified areas may be environmentally rich. Moreover, a large number of tourists have the potential to stress local natural resources and pose risks to the environmental health of such sparsely accessed locations. Given that the threshold method used for screening has inherent limitations [36], exempting such projects from the purview of the EIA weakens the EIA regime further. Understandably, the projects involving strategic considerations, as determined by the Federal Government, are exempted from the purview of the EIA regulation. However, defining "strategic considerations" would make the EIA system transparent [31].

3.2 Scoping for EIA reports preparation

Sector-wise standard TOR are proposed to be prescribed for scoping in place of the case-by-case TOR by the appraisal committee. At its discretion, the regulatory authority can refer a project proposal to the appraisal committee within 30 days of its online registration for recommending additional TOR. The appraisal of the EIA reports is to be done strictly as per the TOR issued, and the appraisal committee can only seek fresh studies at the time of the appraisal if it notices new facts.

Exemption from preparing EIA reports

Unlike category A and B1 projects, category B2 projects are not required to prepare EIA reports and are exempted from public consultation. Based on the details submitted in the prescribed format and the environmental management plan, the state-level regulator will take the decision and convey it through system-generated environmental permission with standard conditions for such projects. It needs to be noticed that a meaningful environmental management plan needs mitigation and monitoring measures based on the identified and evaluated impacts and an action plan to implement the same. A good EIA framework would provide for subjecting certain types of B2 category projects, such as chemical handling, storage, and manufacture, to an initial environmental evaluation.

Standard terms of reference

The scoping could provide for examining the information given by the project proponent in the prescribed format and also on the collection of the requisite information, wherever necessary, to prescribe the TOR to prepare the EIA report for each proposal rather than standardize the TOR based on the type of project, or system-generated instant TOR for B2 category construction projects, just to expedite the commencement of EIA report preparation immediately after the online registration to seek environmental clearance. It must be appreciated that standard TOR have limitations because of the lack of consideration given to the project size and location and greenfield and brown-field projects. The standard TOR cannot facilitate conducting environmental assessments to serve sustainability-based objectives [35]. Given that the non-comprehensive scoping leads to generic EIA reports, defeating the purpose of EIA [48], the shortcomings in the scoping process, such as the consideration of critical environmental issues and valued environmental components in the study area and methodologies for impact identification and predictions [20], could have been offset. The involvement of the concerned public, civil society groups, community-based organizations, and NGOs in the

formulation of TOR for at least mega projects could help make the decision-making process transparent and democratic [49] and provide for a) recognizing uncertainties [50] in the prediction of impacts, e.g., those arising as a result of lack of complete knowledge of the complex ecosystems and the processes, lack of long-term data, reliability of data, limitations of the prediction models used, abnormal conditions, etc., and b) integration of risk assessment into EIA, given that all the impacts do not get assessed adequately in EIA [51,52].

Scoping for industrial areas

Developing industrial areas/estates/parks has been a popular means to promote industrial development, especially the medium and small enterprises in several countries. But the requisite environmental infrastructure and effective institutional mechanism for comprehensive environmental management of such industrial areas still need to be improved in several places. The factors responsible for this situation include a need for specific TOR for divergent industries in size, capital base, product mix, resource availability, and workforce employed. As a result, the EIAs for industrial estates are generally based on several assumptions about the number and types of industries that are likely to be set up, their size, product mix, resource requirement, pollution load, common environmental infrastructure to manage wastewater and hazardous waste, environmental risk management infrastructure including off-site emergency management program, synchronization of the commencement of individual industrial projects and the common facilities, etc. The limitations of common wastewater treatment facilities in ten prominent industrial areas are discussed, and the operating efficiencies of the treatment methods employed to reduce organic pollution load are reported to be 75-85% [53], causing contamination of water resources by the discharge of improperly/partially treated wastewater. The TOR does not prescribe environmental risk assessment studies to consider uncertainty about the characteristics of the incoming wastewater from different sources to the common wastewater treatment facilities and the ultimate fate of the pollutants. Central Pollution Control Board conducts a comprehensive environmental assessment of industrial clusters periodically. It categorizes these clusters as critically polluted areas, severely polluted areas, and other polluted areas based upon the comprehensive environmental pollution index [54], a rational number to characterize the environmental quality at a given location by following the algorithm of source, pathway, and receptor in addition to the variables like the scale of industrial activity, scale of exceedance of the prescribed environmental quality, health-related statistics, and compliance status of industries. Based on a nationwide environmental assessment [54], 43 industrial clusters were identified as critically polluted. The National Green Tribunal took up *suo moto* cognizance of pollution in industrial clusters and ordered the closure of 69 polluted industrial areas [55]. Thus, locating industries in approved industrial areas does not assure environmental protection though it facilitates industrial development.

Baseline environmental information

The reduction of the study area for B1 category projects from 10 to 5 km while increasing thresholds for many B1 category projects implies that the projects that are presently considered to have the potential of causing impacts to as far as 10 km distance, i.e. in an area of 314 sq km around the project location, will have impacts limited to 5 km distance, i.e. in an area of 78.5 sq km around the project location. There is no evidence that this reduction has any scientific basis. Further, in the absence of TOR prescribing establishing the significance of the impacts, generic impact mitigation measures would continue to be suggested in the EIAs [20,56]. For the preparation of the EIA reports, the generation of primary baseline environmental information over one season (except for river valley projects for which it is over a year) is prescribed even though India experiences three distinct seasons, viz. summer, monsoon, and winter with a wide variation in temperatures, humidity, wind velocities, cloud cover, precipitation, etc. Moreover, TOR does not prescribe collection and rigorous analysis of trends of historical information for the environmental parameters related to valued

environmental components. The baseline conditions could ideally be established [57] for different environmental components in different seasons to capture the information when these components are under maximum stress, e.g. a) *air environment* in the winter season when the dispersion is the least, b) *water* and *soil environment* and *ecology* in the summer season when water availability is scarce, water quality is relatively poor except in the regions getting water from snow melting, and soil has a low moisture content, putting stress on the growth and survival of flora and fauna, and c) *land use/land cover*, and *flora* in the pre-and post-monsoon periods when the maximum variations could be captured, compared and analyzed. The draft could have recognized, at least for certain mega projects, that under different seasonal conditions, the baseline scenario [20] will reflect a kind of worst-case scenario for each environmental component and form a realistic basis for impact assessment and determining the significance of the impacts.

3.3 Public participation

Several projects, including the expansion of up to 50% of the existing capacity, are exempted from the mandatory public hearing process, which is a retrograde step. Further, the time provided to the public to submit their responses is reduced from 30 to 20 days. For river valley and hydroelectric projects, the public hearing is at the discretion of the competent authority. As a result, the local population could be denied the right to the project information and the opportunity to express their views on the proposed development. The EIA regime thus fails to embody the insights of deliberative democracy, collaborative rationality, and environmental justice [17], ridiculing the EIA serving as the instrument of good environmental governance [58].

3.4 EIA review and decision-making

With the increase in thresholds for certain category A projects, the workload at the federal level for EIA review and decision-making is expected to reduce substantially from the current level. This offers an excellent opportunity to conduct EIA reviews rigorously rather than superficially, and hence strengthen the EIA review process, key areas identified [19] to improve the EIA process and enhance the overall quality of the EIA reports in the long run. While this could be a positive development at the federal level, the workload at the state level, where the already burdened pollution control boards act as temporary secretariats for EIA review of category B1 projects, would increase substantially. To discharge the increased responsibilities effectively and ensure independence for decision-making, there is a need for capacity augmentation at the state level, both for the state expert appraisal committees and state environmental impact assessment authorities. At the same time, the task at the state level would ease to some extent due to: a) delegation of authority for a large number of category B2 mining of minor minerals' projects to the district level mechanism, and the specified building and construction projects to the local bodies for issuing environmental permissions, and b) exemption granted to several projects such as isolated storages of hazardous chemicals, and construction from the mandatory environmental clearance. In turn, this would necessitate increasing environmental awareness, appreciation of environmental impacts, and capacity building at the third tier of decision-making. The functioning at tier 2 and tier 3 levels is a major challenge to the EIA system due to numerous projects seeking environmental clearance or environmental permission, and the effectiveness of the EIA process would largely depend upon how the authorities at these levels manage local pressures, given the different administrative and political cultures at different tiers.

Even though the qualifications and experience of EIA appraisal committee members are broadly specified, the selection process of members is not transparent, even in the draft. A rigorous and transparent selection process can only help ensure that competent and independent EIA professionals are nominated for effective EIA appraisal, an essential step in the EIA system [19,59].

3.5 EIA follow-up

Environmental clearance conditions for EIA follow-up

The post-project implementation mechanism mandates that the project proponent gives prominent advertisements, highlighting project environmental clearance in at least two local newspapers and details of the websites of the regulatory authorities and other specified agencies, and permanently displays the environmental clearance letter on its website. The regulatory authorities and other agencies are also required to make the environmental clearance letters available in the public domain. The submission of annual (half-yearly at present) reports by the project management for compliance with the stipulated environmental clearance conditions is also mandated, and the concerned regulatory authority is required to make these available in the public domain. To complement the existing institutional mechanism for compliance monitoring, viz. federal agencies for category A projects and state pollution control boards for category B projects (even though the state pollution control boards generally focus on the monitoring and control of pollution), the draft provides for roping in impaneled government institutions for the compliance monitoring of the stipulated environmental clearance conditions against baseline information given in EIA reports and environmental management plan, and the project activities randomly. But, there is a lack of clarity about when this provision would be used and who would bear the expenses. Monitoring the implementation of the terms and conditions of the environmental clearance built into the draft will increase its effectiveness and improve transparency. The Indian Union, Environment and Forests Minister stated [60] that "our priority is both environmental protection and development; only then can our country become a 5-trillion-dollar economy. We are bringing about a regime change. We will introduce fewer conditions but ensure their fullest implementation. If need be, we will amend the law so that you get the ease of doing responsible business. Because freedom is never a one-way street."

EIA follow-up framework

It is observed that the non-compliant projects could get away with monetary fines, and no role is envisaged for NGOs and citizen groups who could otherwise play the role of watchdogs in monitoring the environmental clearance conditions by examining the periodic compliance reports available in the publicly accessible database, and reporting the actual impacts felt. The objective design for EIA follow-up, its objective review, and an independent third-party audit of the environmental management program [56], right through the project implementation lifecycle phase of the project, and availability of the periodic audit reports in the public domain to help make the EIA follow-up transparent and effective continue to elude the draft also. Likewise, a lack of clarity continues on the core values for EIA follow-up [61], viz. need for follow-up, the scale of follow-up, the application of EIA follow-up, and EIA follow-up outcomes on the part of regulators for a more objective EIA follow-up. Strong regulation is a prerequisite [61,62] to increasing transparency, outlining stakeholder expectations, and establishing structured and systematic procedures. However, it may not be sufficient to guarantee successful EIA follow-up outcomes. Devising an appropriate format for EIA follow-up reporting to encompass the entire scope of EIA follow-up, viz. evaluation of the accuracy of predictions, residual impact management, concerns of affected persons, environmental performance, the effectiveness of the follow-up system, etc., and clarity on the critical drivers to achieve constructive outcomes of EIA follow-up, viz. the commitment of regulators, self-regulation by the project proponent, and public pressure to add value to EIA follow-up and hence the EIA system are not evidenced in the draft also.

3.6 Other aspects

The very foundation of the EIA system needs to be stronger, given that EIA is conducted after the project proponent acquires land for the proposed project. Unlike the prevailing regulation, the draft

permits the project proponent to carry out some activities at the site, viz. fencing or compound wall to secure land, construction of temporary sheds for security personnel, leveling of land without felling any trees, and geotechnical investigations, even before obtaining the environmental clearance. This contradicts the provisions under the Forest Act that necessitate approval before initiating any activity in the forest area. Harmonizing the approval requirements from different agencies could speed up the project implementation. Further, there is a provision for granting *post facto* environmental clearance to the projects operating without obtaining prior environmental clearance [34], albeit with a penalty to be determined by the regulatory authority. "This is a fait accompli situation, which leans more heavily towards continuing operations rather than shutting them down" [33]. The Supreme Court of India ruled: "The concept of an *ex-post facto* environmental clearance is in derogation of the fundamental principles of environmental jurisprudence", "detrimental to the environment, and could lead to irreparable degradation", and is considered *alien to environmental jurisprudence* [63]. It is difficult to discern why cognizance of such violations will not be taken if reported by the local people, project-affected persons, civil society, or media!

4. Evaluation of the EIA regulations using an ex-ante framework

The performance of EIA systems in different countries is evaluated by researchers [35,37,38] using specific criteria and principles. There has been an increasing interest in understanding the potential effects of the reforms proposed in environmental legislation/regulations. The proposed changes in EIA regulations may have intended as well as unintended ramifications, positive or negative. Such reforms can potentially threaten EIA if they are driven by the objectives of "simplifying" and increasing the efficiency of the approval mechanism for development [8,17]. The reforms driven by the goals of public interest, sustainability, transparency, and adoption of good practices in the EIA systems [35,48,64] offer opportunities for advancements. Next-generation assessment [35] emphasizes sustainability-based assessments for policies, programs, plans, and development projects and activities that might significantly affect sustainability prospects. The sustainability-based framework applies to the EIA regime- design as well as evaluation.

The prevailing and the draft EIA regulations are evaluated using modified criteria to suit the Indian context in the *ex-ante* framework [35,37,38]. **Table 2** reveals that the most good practice elements are either inadequately addressed or not addressed in the current and draft regulations. The emphasis of the proposed regulation is on permitting several projects without subjecting them to the rigor of EIA and simplifying and speeding up the environmental clearance procedure. The evaluation in **Table 2** affirms that the current regulation is a shade better than the draft. However, the evaluation scores reflect that the EIA regime needs drastic reforms and substantial improvements by incorporating the good practice elements of next-generation environmental assessment and imbibing sustainability, comprehensiveness, and transparency at every stage of the EIA process.

An opportunity lost

From the above, it is apparent that the experience gained from the implementation of the EIA system over the last three decades is not used in framing the draft regulation to simplify the EIA process and fine-tune it to overcome the weaknesses and limitations in the EIA system [20,21] while ensuring that the EIA prime objectives and EIA pillars are kept intact. The next-generation environmental assessment elements should be considered in making the EIA system more effective in achieving the EIA outcome objectives [65,66]. This calls for more earnestly engaging the precautionary approach to the much-needed development.

The framing of a regulation to replace an existing regulation offers an opportunity to look back and forward to, e.g. (a) learn from the implementation experience, review the feedback received from different corners and plug loopholes in the system, (b) evaluate the performance of the regulation proposed to be superseded, (c) systematically evaluate the ef-

Table 2. The evaluation of environmental impact assessment regulation in India.

Broad theme	Good practice EIA element	EIA draft regulation 2020	EIA regulation 2006	Remarks for the draft regulation
1. Purpose (2)	Core purpose as contributing to sustainability	0	0	Not spelled out
	A wide range of issues relevant to determining whether the proposal is in the public interest	0	0	Not spelled out
	Theme 1 score (6)	0	0	
2. Planning integration and strategic assessment (3)	SEA requirement, in addition to the project-level EIA	0	0	SEA/REA not practiced
	Clearly defined participation process for SEA	0	0	Not applicable
	Tiering of project-level EIA with SEA/REA established	0	0	Not applicable
	Theme 2 score (9)	0	0	
3. Applicability of EIA and screening (4)	Applies to a wide range of proposals through different levels	3	3	Projects are listed
	Clear rules spelled out for projects falling under the purview of EIA	3	3	Projects are categorized
	Clear rules and processes for designating additional projects and exempting currently subject projects	1	1	Not specified, amendments get issued
	Decision-making on projects based on potential significant impacts	0	0	No, based on scale criteria for the listed projects
	Theme 3 score (12)	7	7	
4. Scoping (9)	Timely and clear communication of project-specific TOR	1	2	Standardization of TORs
	Differentiates greenfield and brownfield projects	0	0	No, the same TORs
	Meaningful public participation in scoping	0	0	No provisions
	Studies as per TOR but based on potential impact significance	1	1	Yes, but impact significance is not specified
	Addressing cumulative effects	0	0	Not specified
	Addressing physical, ecological, and socioeconomic impacts and their integration	2	2	Yes, but integration is not specified
	Addressing meaningful risk assessment and integrating with implementable EMPg	1	1	Formal RA, no integration or implementable EMPg
	Each assessment addresses short-term and long-term impacts	1	1	Not specifically
	Project justification based on the comparison of potentially reasonable alternatives generated using proper methodologies	1	1	No, superficial consideration of alternatives
	Theme 4 score (27)	7	8	
5. Impact assessment and preparation of EIA report (13)	Technically sound and reliable collection and analysis of data	1	1	Quality control on data and analysis not specifically emphasized
	Justification of criteria adopted in selecting methods for impact identification	0	0	Criteria are not specified
	Justification of criteria adopted in selecting methods for impact prediction	1	1	Standard methods without justification

Table 2 continued

Broad theme	**Good practice EIA element**	**EIA draft regulation 2020**	**EIA regulation 2006**	**Remarks for the draft regulation**
	Justification of criteria adopted for significance evaluation	0	0	No determination of significance
	Identification and evaluation of cumulative effects	0	0	Not specified
	Mitigation measures clearly related to the predicted impacts	1	1	Generic mitigation measures
	Implementable environmental management program	1	1	Generic
	Significance evaluation based on sustainability criteria	0	0	Not specified
	Assessment conclusions justified in light of sustainability criteria	0	0	Not specified
	Assessment clearly communicates likely trade-offs	0	0	Not specified
	Assessment clearly communicates uncertainties	0	0	Not specified
	EIA report is publicly and easily accessible	3	3	Yes, uploaded to the public domain
	Non-technical summary of the EIA report	2	2	Not comprehensive
	Theme 5 score (39)	8	8	
6. Review of project proposal and impact studies (5)	Rules and procedures for review are clear	1	1	Rules clear, but not procedures
	Engagement of a credible body of impartial reviewers selected in a transparent manner	2	2	Yes, but not in a transparent manner
	Reviewers have sufficient technical expertise in proposed activities and associated impacts	2	2	Yes, but not all the reviewers
	Reviewers' recommendations are thoroughly justified, including the application of sustainability criteria	0	0	No
	EIA review reports are publicly and easily accessible	1	1	Ad hoc review based on the presentation by the project proponent, minutes uploaded
	Theme 6 score (15)	6	6	
7. Decisions and conditions (5)	Rules and procedures for decision-making are clear	1	1	No procedures
	Decision-making is based on sustainability criteria	0	0	No sustainability criteria used
	Decision-making clearly communicates and justifies trade-offs	0	0	Trade-offs not considered
	Public reporting of decisions and decision conditions with reasons	2	2	Yes, but without reason
	Specific and enforceable decision conditions	1	1	Generally, generic conditions
	Theme 7 score (15)	4	4	
8. Post-decision follow-up program (4)	Continuous evaluation through EMPgs, including actual impacts and compliance with the approval conditions	1	1	Weak compliance evaluation, not real impacts

Table 2 continued

Broad theme	**Good practice EIA element**	**EIA draft regulation 2020**	**EIA regulation 2006**	**Remarks for the draft regulation**
	Assignment of responsibilities and resources for implementing EMPgs	2	2	Yes, but several grey areas
	Sanctions and penalties for non-compliance with conditions and environmental and sustainability legislation	1	1	Only for pollution control regulations, no sustainability legislation
	EMPgs implementation and EIA follow-up reports are publicly and easily accessible	2	1	Yes, for compliance conditions, but not EMPg
	Theme 8 score (12)	6	5	
9. Meaningful public participation (4)	Recognition of indigenous rights	2	2	Yes, separate regulations
	Meaningful partnership opportunities for local authorities/agencies	1	2	Public participation diluted
	Rules and procedures to facilitate public participation, including socially vulnerable groups	1	2	Yes, but nothing specific for socially vulnerable groups
	Consideration of public consultations in decision-making and making these publicly and easily accessible	1	2	Yes, but many projects exempted from consultations
	Theme 9 score (12)	5	8	
10. Administrative efficiency and learning (6)	Clear and realistic timelines for assessment streams	2	2	Timelines specified
	Clear and realistic rules and procedures for addressing exceptions and managing timelines interruptions	1	1	No clear rules and procedures
	Clear rules and procedures regarding the roles of concerned federal agencies and other jurisdictions in assessments	2	2	Rules but not clear procedures
	Encourages other jurisdictions and agencies to cooperate in assessments	1	2	More for post-assessment requirements
	Monitoring of the effectiveness of the EIA regime	0	0	No provision
	Periodic review of EIA legislation based on the above effectiveness monitoring reports	0	0	No review mechanism
	Theme 10 score (18)	6	7	
Overall score (165)		49	53	

Note: Score 0: not addressed, 1: major inadequacies, 2: minor adequacies, and 3: addressed strongly.

fectiveness of EIA processes using a comprehensive and criteria-based *ex-ante* framework of four dimensions of effectiveness, viz. procedural, substantive, transactive, and normative [67,68] and EIA good practices in impact assessment reforms [37], (d) integrate the sustainability issues [35,38], climate change mitigation goals, and the UN Sustainable Development Goals [69-71] that are likely to become a central component of the future EIA [1], (e) strengthen public consultation process by employing appropriate visual communication tools [72], (f) promote and adopt EIA good practices [73] to enhance the EIA's effectiveness, and (g) use advances in information and communications technology to make the EIA process and environmental governance more efficient and effective [74]. Therefore, these aspects should be taken into

consideration when the draft is put forward again, reengineered, or presented in a new version.

5. Conclusions

In response to lobbying by project proponents and political pressure [75], democratic governments generally try to adopt a "simplified" or "practical" approach to the EIA process. As a result, even after enacting robust EIA regulations, these are diluted in the garb of the so-called "reforms" or "simplification" [6,76,77], overlooking that government actions may result in compromising the prime objective of "protection, maintenance, and enhancement of the environment". Environmental management in India has generally responded to environmental legislations [16], many of which are driven by the judiciary, international development banks, and multilateral agencies. Like the earlier, the notified draft EIA regulation is subordinate legislation, not an Act passed by the parliament, and reflects the prevailing political and economic context. It neither makes any reference to the higher levels of environmental assessment, viz. strategic, regional, or sectoral environmental assessment, nor to cumulative effects assessment as a part of project-level EIA. Environmental legislation and its implementation and follow-up are vital to environmental governance. Besides casting apprehensions on the EIA representing a proactive and preventative approach to environmental management and protection, the draft regulation puts a big question mark on whether the EIA is intended to serve as an environmental policy instrument [65]. More so when efforts on institutional reforms are not evident, and the focus appears to be on procedural reforms to simplify and fast-track the EIA approval mechanism. Given that EIAs rarely stop bad projects having the potential to destroy irreplaceable habitats or threaten the last representatives of endangered species, such "assessments may increasingly become not worth the paper they are printed on" [78].

An opportunity is lost in framing the draft EIA regulation by incorporating best practice elements of next-generation environmental assessment to make it an effective instrument for good environmental governance [58]. The application of the elements of good governance, viz. access to information, transparency, and public participation [39] is evident. Still, these, along with stakeholder involvement, responsibility, and accountability, are not reinforced further within the draft EIA regulation. The provision for *post facto* environmental clearance contradicts the precautionary principles of sustainability. The cognizance of any violations of the EIA regulation, taken *suo moto*, or reported by the project proponent or government authorities but not by the stakeholders such as local people, project-affected persons, or even media defies any rationale. Therefore, there is a need to incorporate and strengthen good practice EIA elements, summarized in **Table 2**.

6. Way forward

Middle- and low-income countries face a dilemma on the policies and measures to facilitate investments for economic development on the one hand and stringent environmental regulations on the other. Nevertheless, "simplification" to compress the time for the EIA process should not be at the cost of sacrificing the prime objectives of the EIA and the EIA pillars [75]. The EIA regulation could be an Act passed by the parliament instead of subordinate legislation. An EIA regulatory framework, even while aiming to facilitate ease of business, should address the prime issue of improving the efficacy of the EIA system in the country and making it more transparent and democratic by imbibing several effective measures, such as a) robust screening, b) strengthening the scoping process including involving the concerned public, civil society groups, community-based organizations, and NGOs in formulating TOR for at least mega projects, c) making reference to the higher levels of environmental assessment, viz. strategic, regional, or sectoral environmental assessment, d) putting into practice cumulative effect assessment and consideration of reasonable alternatives, e) improving the quality of EIA reports, spelling out the criteria for determining significance and emphasizing on the assessment of significant impacts, f) imposing a scrutiny fee for EIA reports to generate some funds to

strengthen the EIA review by inducting independent and experienced EIA professionals for transparent and rigorous appraisal of the EIA reports, g) meticulous and objective EIA follow-up [19,20] involving citizen groups, and h) introducing periodic reforms in the EIA systems to address a broader range of concerns, including health and environmental risk [52,79], sustainability, and climate change-related issues. For a prudent policy, specific types of projects must be subjected to initial environmental evaluation instead of granting a blanket exemption [80]. A proactive measure through detailed guidelines on good engineering and environmental practices for projects with less potential environmental impacts from micro-, small- and medium-scale enterprises will be a positive step for simplification and environmental protection. Transparency in the selection of members of EIA appraisal committees can add to the credibility and effectiveness of the EIA system. To raise the EIA process above bureaucratic procedure and paper exercise, it is vital to strengthen the EIA follow-up with a firm intention of enforcing the regulation to comprehend the outcome of the EIA.

After decades of experience in implementing EIA, precise clarity must be developed on a) learnings from own experience and the experience of other emerging as well as developed economies; b) specific objectives of the earlier EIA regulations and the extent to which those are achieved; c) whether the criteria for screening should be based on the scale thresholds of projects or their potential significant environmental impacts; d) the issues encountered in the EIA system; e) whether EIA impedes the development projects; f) whether all the stakeholders, especially the regulators, project proponents, and EIA consultants realistically appreciate the role and importance of EIA, especially concerning its objectives and potential benefits; etc. An in-built mechanism for periodic performance evaluation of the regulatory instrument itself can help clarify these issues and strengthen the regulation. The EIA regulation must spell out the themes—purpose and planning integration and strategic assessment in addition to the good practice EIA elements and sustainability-related aspects in different themes.

Conflict of Interest

There is no conflict of interest.

References

[1] Strengthening the Science-Policy Interface: A Gap Analysis [Internet]. United Nations Environment Program (UNEP); 2018. Available from: https://www.unep.org/resources/report/strengthening-science-policy-interface-gap-analysis

[2] Esseghir, A., Khouni, L.H., 2014. Economic growth, energy consumption and sustainable development: The case of the Union for the Mediterranean countries. Energy. 71, 218-225. DOI: https://doi.org/10.1016/j.energy.2014.04.050

[3] Marques, A.C., Fuinhas, J.A., Pais, D.F., 2018. Economic growth, sustainable development and food consumption: Evidence across different income groups of countries. Journal of Cleaner Production. 196, 245-258. DOI: https://doi.org/10.1016/j. jclepro.2018.06.011

[4] Nita, A., Fineran, S., Rozylowicz, L., 2022. Researchers' perspective on the main strengths and weaknesses of Environmental Impact Assessment (EIA) procedures. Environmental Impact Assessment Review. 92, 106690. DOI: https://doi.org/10.1016/j.eiar.2021.106690

[5] Fischer, T.B., 2022. 'Simplification' of environmental and other impact assessments—an international trend?. Impact Assessment and Project Appraisal. 40(5), 355-355. DOI: https://doi.org/10.1080/14615517.2022.2108223

[6] Fonseca, A., Sánchez, L.E., Ribeiro, J.C.J., 2017. Reforming EIA systems: A critical review of proposals in Brazil. Environmental Impact Assessment Review. 62, 90-97.

[7] Lawrence, D.P., 2013. Environmental impact assessment: Practical solutions to recurrent problems and contemporary challenges. John Wiley & Sons: Hoboken.

[8] Pope, J., Bond, A., Morrison-Saunders, A., et

al., 2013. Advancing the theory and practice of impact assessment: Setting the research agenda. Environmental Impact Assessment Review. 41, 1-9.
DOI: https://doi.org/10.1016/j.eiar.2013.01.008

[9] Strategic Environmental Assessment in South Africa [Internet]. Council for Scientific and Industrial Research (CSIR); 2000. Available from: https://www.commissiemer.nl/docs/os/sea/case-studies/various_south_africa_6_cases_00_csir.pdf

[10] Jha-Thakur, U., Gazzola, P., Fischer, T.B., et al., 2009. Effectiveness of strategic environmental assessment—the significance of learning. Impact Assessment and Project Appraisal. 27(2), 133-144.
DOI: https://doi.org/10.3152/146155109X454302

[11] Partidário, M.R., 2012. Strategic Environmental Assessment Better Practice Guide [Internet]. Available from: https://www.iaia.org/pdf/special-publications/SEA%20Guidance%20Portugal.pdf

[12] Rathi, A.K.A., 2016. Environmental impact assessment: A practical guide for professional practice. Akar Unlimited: Ahmedabad.

[13] Shammi, M., Halder, P.K., Tareq, S.M., et al., 2022. From environmental impact assessment to strategic environmental assessment in Bangladesh: Evolution, perspective, governance and challenges. Environmental Impact Assessment Review. 97, 106890.
DOI: https://doi.org/10.1016/j.eiar.2022.106890

[14] Therivel, R., González, A., 2020. Is SEA worth it? Short-term costs v. long-term benefits of strategic environmental assessment. Environmental Impact Assessment Review. 83, 106411.
DOI: https://doi.org/10.1016/j.eiar.2020.106411

[15] Hironaka, A., 2002. The globalization of environmental protection: The case of environmental impact assessment. International Journal of Comparative Sociology. 43(1), 65-78.

[16] Rathi, A.K.A., 2018. Environmental management in the Indian context. Environmental Analysis and Ecological Studies. 3(5), 1-4.
DOI: https://doi.org/10.31031/EAES.2018.03.000574

[17] Morgan, R.K., 2012. Environmental impact assessment: The state of the art. Impact Assessment and Project Appraisal. 30(1), 5-14.
DOI: https://doi.org/10.1080/14615517.2012.661557

[18] Jalava, K., Pasanen, S., Saalasti, M., et al., 2010. Quality of environmental impact assessment: Finnish EISs and the opinions of EIA professionals. Impact Assessment and Project Appraisal. 28(1), 15-27.
DOI: https://doi.org/10.3152/146155110X488826

[19] Sadler, B., 1996. Environmental Assessment in a Changing World: Evaluating Practice to Improve Performance [Internet]. Available from: https://trid.trb.org/view/653262

[20] Rathi, A.K.A., 2017. Evaluation of project-level environmental impact assessment and SWOT analysis of EIA process in India. Environmental Impact Assessment Review. 67, 31-39.
DOI: http://dx.doi.org/10.1016/j.eiar.2017.08.004

[21] Jha-Thakur, U., Khosravi, F., 2021. Beyond 25 years of EIA in India: Retrospection and way forward. Environmental Impact Assessment Review. 87, 106533.
DOI: https://doi.org/10.1016/j.eiar.2020.106533

[22] Mathur, S., 2016. Environmental Impact Assessment Overview [Internet]. [cited 2016 Nov 29]. Available from: https://www.scribd.com/document/519089345/Eia#

[23] Paliwal, R., 2006. EIA practice in India and its evaluation using SWOT analysis. Environmental Impact Assessment Review. 26(5), 492-510.
DOI: https://doi.org/10.1016/j.eiar.2006.01

[24] Sinha, R.P., 2014. Environmental Laws and Constitutional Provisions in India [Internet]. [cited 2019 June 10]. Available from: http://www.legalservicesindia.com/article/1926/Environmental-Laws-and-Constitutional-Provisions-In-India.html

[25] National Environmental Policy 2006 [Internet]. [cited 2018 Sep 5]. Available from: https://www.india.gov.in/national-environment-policy-2006

[26] Vellore Citizens Welfare Forum vs Union of India and others. 1996. AIR SC 2715: 5 SCC 647.

[27] Ministry of Environment and Forests (MOEF). 1994. Environmental Impact Assessment Notification. New Delhi: MOEF.

[28] Ministry of Environment and Forests (MOEF). 2006. Environmental Impact Assessment Notification. New Delhi: MOEF.

[29] Ministry of Environment, Forests and Climate Change (MOEF). 2020. Draft Environmental Impact Assessment Notification. New Delhi: MOEF.

[30] Mishra, A., Mohanbabu, N., Anujan, K., 2020. Draft EIA 2020 Undercuts India's Biodiversity and Climate Goals [Internet]. [cited 2020 Dec 16]. Available from: https://www.downtoearth.org.in/blog/environment/draft-eia-2020-undercuts-india-s-biodiversity-and-climate-goals-73201

[31] Draft EIA Notification 2020: Dilutes EIA Process & Encourages Violations [Internet]. South Asia Network on Dams, Rivers and People (SANDRP); 2020. [cited 2020 Sep 15]. Available from: https://sandrp.in/2020/06/23/draft-eia-notification-2020-dilutes-eia-process-encourages-violations/

[32] Menon, M., Kohli, K., 2020. EIA Regulations: Don't Ignore the People it Will Affect the Most [Internet]. [cited 2020 Aug 16]. Available from: https://timesofindia.indiatimes.com/blogs/voices/eia-regulations-dont-ignore-the-people-it-will-affect-the-most/

[33] Sinha, N., 2020. Why Draft EIA 2020 is Problematic? [Internet]. Available from: https://mumbaimirror.indiatimes.com/opinion/columnists/by-invitation/why-draft-eia-2020-is-problematic/articleshow/77173534.cms

[34] Jolly, S., Singh, S., 2021. Environmental impact assessment draft notification 2020, India: A critique. Chinese Journal of Environmental Law. 5(1), 11-36.
DOI: https://doi.org/10.1163/24686042-12340062

[35] Gibson, R.B., Doelle, M., Sinclair, A.J., 2016. Fulfilling the promise: Basic components of next generation environmental assessment. Journal of Environmental Law and Practice. 29, 257.

[36] Petts, J., 1999. Handbook of environmental impact assessment. Blackwell Science: London.

[37] Doelle, M., Sinclair, A.J., 2019. The new IAA in Canada: From revolutionary thoughts to reality. Environmental Impact Assessment Review. 79, 106292.
DOI: https://doi.org/10.1016/j.eiar.2019.106292

[38] Fonseca, A., Gibson, R.B., 2020. Testing an ex-ante framework for the evaluation of impact assessment laws: Lessons from Canada and Brazil. Environmental Impact Assessment Review. 81, 106355.
DOI: https://doi.org/10.1016/j.eiar.2019.106355

[39] Runhaar, H., Gommers, A., Verhaegen, K., et al., 2019. The effectiveness of environmental assessment in Flanders: An analysis of practitioner perspectives. Environmental Impact Assessment Review. 76, 113-119.
DOI: https://doi.org/10.1016/j.eiar.2019.02.006

[40] Gupta, G.S., Rathi, A.K.A., 1996. Small-scale chemical industry in Gujarat: Structure, conduct and performance. Economic and Political Weekly. 31(48), M79-M84.

[41] Rathi, A.K.A., Puranik, S.A., 1998. Small scale chemical industry in Gujarat-some attributes. Indian Chemical Engineer. 40, 178-186.

[42] Ministry of Micro, Small & Medium Enterprises (MSME). 2020. Notification on Criteria for Classification of MSME. New Delhi: MSME.

[43] Bichhri Industrial Pollution Case [Internet]. Indian Council for Enviro-Legal Action (ICELA); 1996. [cited 2019 Aug 16]. Available from: https://www.elaw.org/es/content/india-icela-v-union-india-wp-9671989-19960213-bichhri-industrial-pollution-case

[44] Mehta M.C. vs Union of India and others. 1987. Oleum Gas Leakage Case at Shriram Foods and Fertilizers, Delhi. AIR SC 965 SCR (1) 819.

[45] Joshi, M., 2008. Chlorine Gas Leak at Jamshedpur [Internet]. [cited 2019 Aug 16]. Available from: https://idsa.in/idsastrategiccomments/TheChlorineGasLeakatJamshedpur_MJoshi_310508

[46] 50 Ill after Gas Leak from German Chemical

Plant [Internet]. The Times of India (TOI); 2013. [cited 2019 Jun 10]. Available from: https://timesofindia.indiatimes.com/city/indore/50-ill-after-gas-leak-from-German-chemical-plant/articleshow/19827905.cms

[47] Hindustan Times (HT), 2017. Chlorine Gas Leak. [cited 2019 Aug 16]. Available from: https://www.hindustantimes.com/india-news/19-hospitalised-after-chlorine-gas-leakage-in-gujarat-village/story-"GFnmnQDiQA8mLsCBCZoOrM.html

[48] Principles of Environmental Impact Assessment Best Practices [Internet]. International Association for Impact Assessment (IAIA); 1999. Available from: http://www.jsia.net/6_assessment/fastips/Principles%20of%20IA.pdf

[49] Withanage, H., 2006. Advocacy Guide to ADB EIA Requirement. Manila: NGO Forum on ADB.

[50] Tucker, G., Treweek, J., 2004. The Precautionary Principle in Impact Assessment: An International Review [Internet]. [cited 2020 Sep 10]. Available from: https://www.academia.edu/1487085/A_review_of_the_application_of_the_precautionary_principle_in_impact_assessment

[51] Zeleňáková, M., Zvijáková, L., 2017. Risk analysis within environmental impact assessment of proposed construction activity. Environmental Impact Assessment Review. 62, 76-89. DOI: https://doi.org/10.1016/j.eiar.2016.10.003

[52] Rathi, A.K.A., 2023. Integration of the standalone 'risk assessment' section in project level environmental impact assessment reports for value addition: An Indian case analysis. Sustainability. 15(3), 2296. DOI: https://doi.org/10.3390/su15032296

[53] Rathi, A.K.A., 2013. Common environmental infrastructure: Case study on the management of common effluent treatment plants. International Journal of Environmental Engineering. 5(1), 93-110. DOI: https://doi.org/10.1504/IJEE.2013.050890

[54] CEPI Technical Report [Internet]. Central Pollution Control Board (CPCB); 2017. [cited 2019 Sep 15]. Available from: https://cpcb.nic.in/cepi-technical-reports/

[55] Kukreti, I., 2019. NGT Orders Closure of 69 Industrial Areas [Internet]. [cited 2019 Sep 15]. Available from: https://www.downtoearth.org.in/news/pollution/ngt-orders-closure-of-69-industrial-areas-65693

[56] Rathi, A.K.A., 2019. Development of environmental management program in environmental impact assessment reports and evaluation of its robustness: An Indian case study. Impact Assessment and Project Appraisal. 37(5), 421-436. DOI: https://doi.org/10.1080/14615517.2018.1558745

[57] Rathi, A.K.A., 2021. Handbook of environmental impact assessment: Concepts and practice. Cambridge Scholars Publishing: Newcastle upon Tyne.

[58] Lyhne, I., van Laerhoven, F., Cashmore, M., et al., 2017. Theorising EIA effectiveness: A contribution based on the Danish system. Environmental Impact Assessment Review. 62, 240-249. DOI: https://doi.org/10.1016/j.eiar.2015.12.002

[59] Rathi, A.K.A., 2021. The need for a robust review system to improve the quality of environmental impact statements: An Indian case study analysis. Environmental Protection Research. 1(1), 38-48. DOI: https://doi.org/10.37256/epr.112021948

[60] NAREDCO to Organise It's 15th National Convention on August 19 [Internet]. [cited 2020 Aug 21]. Available from: https://www.99acres.com/articles/naredco-to-organise-its-15th-national-convention-on-august-19.html

[61] Morrison-Saunders, A., Baker, J., Arts, J., 2003. Lessons from practice: Towards successful follow-up. Impact Assessment and Project Appraisal. 21(1), 43-56. DOI: https://doi.org/10.3152/147154603781766527

[62] Morrison-Saunders, A., Marshall, R., Arts, J., 2007. EIA Follow-up: International Best Practice Principles [Internet]. Available from: https://www.researchgate.net/publication/277853608_EIA_follow-up_international_best_practice_principles

[63] SC Sets Aside NGT's Directions Regarding Ex

Post Facto Environmental Clearance [Internet]. India Legal; 2020. [cited 2020 Sep 1]. Available from: https://www.indialegallive.com/constitutional-law-news/courts-news/sc-sets-aside-ngts-directions-regarding-ex-post-facto-environmental-clearance/

[64] Pinto, E., Morrison-Saunders, A., Bond, A., et al., 2019. Distilling and applying criteria for best practice EIA follow-up. Journal of Environmental Assessment Policy and Management. 21(02), 1950008.
DOI: https://doi.org/10.1142/S146433321950008X

[65] Arts, J., Runhaar, H.A., Fischer, T.B., et al., 2012. The effectiveness of EIA as an instrument for environmental governance: Reflecting on 25 years of EIA practice in the Netherlands and the UK. Journal of Environmental Assessment Policy and Management. 14(04), 1250025.
DOI: https://doi.org/10.1142/S1464333212500251

[66] United Nations Environment Program (UNEP), 2002. Environmental Impact Assessment Training Resource Manual, Second Edition [Internet]. Available from: https://wedocs.unep.org/20.500.11822/26503

[67] Chanchitpricha, C., Bond, A., 2013. Conceptualising the effectiveness of impact assessment processes. Environmental Impact Assessment Review. 43, 65-72.
DOI: https://doi.org/10.1016/j.eiar.2013.05.006

[68] Loomis, J.J., Dziedzic, M., 2018. Evaluating EIA systems' effectiveness: A state of the art. Environmental Impact Assessment Review. 68, 29-37.
DOI: http://dx.doi.org/10.1016/j.eiar.2017.10.005

[69] Kørnøv, L., Lyhne, I., Davila, J.G., 2020. Linking the UN SDGs and environmental assessment: Towards a conceptual framework. Environmental Impact Assessment Review. 85, 106463.
DOI: https://doi.org/10.1016/j.eiar.2020.106463

[70] Morrison-Saunders, A., Sánchez, L.E., Retief, F., et al., 2020. Gearing up impact assessment as a vehicle for achieving the UN sustainable development goals. Impact Assessment and Project Appraisal. 38(2), 113-117.
DOI: https://doi.org/10.1080/14615517.2019.1677089

[71] Partidario, M., Verheem, R., 2019. Impact Assessment and the Sustainable Development Goals (SDGs) [Internet]. Available from: http://www.jsia.net/6_assessment/fastips/Fastips_19%20SDGs.pdf

[72] de Oliveira, A.R., Partidário, M., 2020. You see what I mean?—A review of visual tools for inclusive public participation in EIA decision-making processes. Environmental Impact Assessment Review. 83, 106413.
DOI: https://doi.org/10.1016/j.eiar.2020.106413

[73] Rathi, A.K.A., 2023. Pursuing the distilled good practices to improve the quality of environmental impact assessment reports and hence enhance the EIA effectiveness and help address the concerns of project proponents: An Indian context. Macro Management & Public Policies. 5(1), 26-43.
DOI: https://doi.org/10.30564/mmpp.v5i1.5460

[74] Wasserman, C.E., 2017. Global Search for Efficient and Effective EIA and Environmental Governance: Using Advances in Technology to Achieve Both [Internet]. [cited 2020 July 29]. Available from: https://www.iaia.org/downloads/Global_Search_for_Efficient_and_Effective_EIA_and_Environmental_Governance.pdf

[75] Enríquez-de-Salamanca, Á., 2021. Simplified environmental impact assessment processes: Review and implementation proposals. Environmental Impact Assessment Review. 90, 106640.
DOI: https://doi.org/10.1016/j.eiar.2021.106640

[76] Bragagnolo, C., Lemos, C.C., Ladle, R.J., et al., 2017. Streamlining or sidestepping? Political pressure to revise environmental licensing and EIA in Brazil. Environmental Impact Assessment Review. 65, 86-90.
DOI: https://doi.org/10.1016/j.eiar.2017.04.010

[77] Directive 2014/52/EU of the European Parliament and of the Council, Amendment of the Directive 2011/92/EU [Internet]. European Union

(EU); 2014. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=FR

[78] William, L., 2018. Opinion: Environmental Impact Assessments aren't Protecting the Environment [Internet]. Laurance William's Blog. [cited 2020 Aug 23]. Available from: https://ensia.com/voices/environmental-impact-assessment/

[79] Law, Policy, Institutional Arrangements for EIA [Internet]. [cited 2019 Jul 18]. Available from: https://library.sprep.org/sites/default/files/2022-07/2_Module-2-Jope-D-ESM-Laws-Policies.pdf

[80] Gupta, D., Nayak, S., Tanvani, K., et al., 2022. The Draft EIA Notification 2020: Reduced Regulations and Increased Exemptions [Internet]. [cited 2022 Dec 18]. Available from: https://cprindia.org/briefsreports/the-draft-eia-notification-2020-reduced-regulations-and-increased-exemptions-part-i-ii-no-link-for-pt-1/

BILINGUAL PUBLISHING GROUP

Macro Management & Public Policies

https://journals.bilpubgroup.com/index.php/mmpp

SHORT COMMUNICATION

Brazilian's Legal Framework and Water Regulation

Marcelo Kokke

Department of Law, Dom Holder Camara College, Belo Horizonte, 30150-250, Brazil

ABSTRACT

The legal framework of water regulation can assume different characteristics according to each country's reality. The preservation and conservation of water and ecosystems depend on rules configuration in the Constitution and legal prescriptions. This manuscript presents the Brazilian legal framework and water regulation. The analysis confirms that in the Brazilian system water is regulated as environmental resource and environmental good. From a descriptive methodology, the article explains how the Brazilian legal system works. The article also remarks on the regulation of multiple uses of water, approaching the legal regulation among industrial, agricultural, and human consumption of water. The aim of the paper is to explain normative regulation of water in Brazil, including the court's activities in cases of discharges of sewage directly into the rivers.

Keywords: Water regulation; Brazil; Environmental resource; Environmental good

1. Introduction

Water is a fundamental good recognized as a human right by the United Nations. In spite of this, water must be understood in several ways, according to each peculiar regulatory system of each country and its legal framework. This short article aims to show how water regulation is established by the Brazilian legal framework. First of all, it is necessary to note that each country regulates the water according to its political law-maker system. In this point, it is remarkable that Brazil has a political federative system. It means that Brazil has not one legal framework source, but three.

Brazil's federative system has three levels. These levels are federal law, state laws, and local laws. In Brazil's constitutional system, there are not two, but three federative levels. The federal level is occupied

*CORRESPONDING AUTHOR:
Marcelo Kokke, Department of Law, Dom Holder Camara College, Belo Horizonte, 30150-250, Brazil; Email: marcelokokke@yahoo.com.br

ARTICLE INFO
Received: 30 June 2023 | Revised: 20 September 2023 | Accepted: 7 October 2023 | Published Online: 16 October 2023
DOI: https://doi.org/10.30564/mmpp.v5i4.5819

CITATION
Kokke, M., 2023. Brazilian's Legal Framework and Water Regulation. Macro Management & Public Policies. 5(3): 36-40. DOI: https://doi.org/10.30564/mmpp.v5i4.5819

by the "Union of States", the state level is occupied by twenty-six states and by federal district, and the local level is occupied by the counties or cities. Nowadays, Brazil has more than five thousand and five hundred counties or cities. This article aims to demonstrate how the Brazilian system works and how the water regulation is built.

This article uses a descriptive methodology. It is focused on normative acts. The conclusion is that the Brazilian system treats the water in a double way. The water as environmental source, used by market relationship, and the water as an environmental good. In this case, water has a peculiar regulatory framework. It is interesting to note that if water is regarded as an environmental resource, it will have a different regulation from when water is categorized as an environmental good.

2. Brazilian federalism and water regulation

The Brazilian Constitution [1], in Article 20, determines that the water in the nation's rivers and lakes is a federal good. It is also considered a federal good in cases of rivers or lakes located in two or more states or between Brazil's border with another country. In another way, it is possible to say that it is a federal property, but the water is good of the Brazilian people. It is a diffuse legal good. The water belongs to the Brazilian people. But for the task of water management, water was turned into a federal good. In Article 26, I, the Constitution says that if a river or a lake is situated in a state's area, the water is the property of this state only. In addition to that, subterranean water is the property of the state where it is located. There is no provision that cities or counties have water property. And, if someone asked, the rainwater has no owner. In other words, all individuals can collect rainwater and use it.

The consequence of this system is that under the point of view property, the Brazilian system has a double federative regulation. The regulation of water has federal rules and state regulations. Article 22, IV, determines that competence for law regulation of water system is a federal responsibility. In this way, the Federal Union makes rules, acts, and laws about the water, treating the water as an environmental resource. Even though water as environmental resource is under federal regulation, the States are responsible for applying federal regulations in their territories. For instance, if a company wants to use river water in its production, the company must check first if it is a federal or a state river. In the case of being a federal river, a federal government agency needs to authorize this use. On the other hand, if it is a state river, the attribution is by state government agency. But if it is a subterranean water the competence is just by state government agency.

Therefore, the law that regulates water as an environmental resource is a federal law, but both federal and state agencies apply federal rules. At the same time, each state has its rules about the agencies that will apply the federal rules in their territory. There are regulatory rules of water and execution rules of the water legal framework. Federal acts determine the rules. State rules say how to implement in each state the regulatory execution.

The most important act of the water legal framework is the Federal Act 9.433, published on January 8, 1997. This act establishes the National Water Resources Policy. The article 1º determines:

> *Art. 1 The National Water Resources Policy is based on the following grounds:*
>
> *I—water is a public good;*
>
> *II—water is a limited natural resource, endowed with economic value;*
>
> *III—in situations of scarcity, the priority use of water resources is human consumption and the watering of animals;*
>
> *IV—the management of water resources must always provide for the multiple uses of water;*
>
> *V—the hydrographic basin is the territorial unit for the implementation of the National Water Resources Policy and the performance of the National Water Resources Management System;*
>
> *VI—the management of water resources must be decentralized and rely on the participation of the Government, users and communities.*

It is important to note that the characteristics of public good are linked to multiple uses of water. Article 1º requires conjugating industrial, agricul-

tural, and human consumption of water. In this way, government agencies verify the limits of water use. In periods of drought the water agency must reduce industrial and agricultural use of water in favor of human and animal consumption. The management of water provided for by the law is so relevant that impact several regions of the country.

Although Brazil has high indicators of water availability, the distribution of water is unequal in the territory. The provisions of Art. 1º makes possible the effectiveness of water management. On the other side, water crisis, for instance, in result of climate change provokes hard questions between human direct necessity and agricultural necessity. In a long-term process, the reduction of water in agricultural activities provokes effects on food availability.

Regarding water as an environmental resource, the act determines that those who use the water must pay for it. The public payment is named "*outorga hídrica*" [2]. The payment works as a tax based on the use of water. So, if a company wants to use river water or subterranean water, it must pay the government for this use of water. Article 11 says that "the purpose of granting rights to use water resources is to ensure quantitative and qualitative control of water use and the effective exercise of rights of access to water". It is important to note that insignificant use of water is free of charge. Therefore, small population groups do not have to pay for their water needs. The Act provides:

Art. 11. The purpose of granting rights to use water resources is to ensure quantitative and qualitative control of water use and the effective exercise of rights of access to water.

Art. 12. The rights of the following uses of water resources are subject to grant by the Government:

I—derivation or capture of a portion of the water existing in a body of water for final consumption, including public supply, or input for the production process;

II—extraction of water from an underground aquifer for final consumption or as input for the production process;

III—discharge of sewage and other liquid or gaseous waste, whether treated or not, into bodies of water, for the purpose of dilution, transportation or final disposal;

IV—use of hydroelectric potential;

V—other uses that alter the regime, quantity or quality of water existing in a body of water.

§ 1º Independent of grant by the Government, as defined in regulation:

I—the use of water resources to meet the needs of small population centers, distributed in rural areas;

II—derivations, funding and releases considered insignificant;

III—accumulations of water volumes considered insignificant.

§ 2 The granting and use of water resources for the purpose of generating electricity will be subject to the National Water Resources Plan, approved in accordance with the provisions of item VIII of Art. 35 of this Law, obeying the discipline of the specific sectoral legislation.

The law states the cases where the water agencies require authorization to water use. It does not mean that just the capture of water requires authorization. The discharge of liquids or other products also requires state authorization. Here there is a big problem in the Brazilian system. The network of sewers and treatment plants are legal requirements. However, there are so many problems in the law effectiveness. The water agency has elaborated the Atlas of sewage [3]. According to the water agency, only 43% of the Brazilian population has sewage collected and treated. Moreover, 12% utilize septic tanks. Therefore about 45% of population has proper treatment of sewage.

Unfortunately, 18% has collected but not treated sewage. The other 27% have not collected or treated sewage. The situation provokes water contamination and environmental problems. The environmental problem comes to Courts. There are so many class actions about the subject. In May 2023, the Superior Tribunal de Justiça, the second highest Court of Brazil, judged the obligation of environmental damage reparation in cases of throwing sewage without treatment in the rivers [4]. The environmental liability in Brazil is covered by the principle of liability without fault. The Courts use this argument to force public and private agencies to make effective sewage collection and treatment [5].

Act 9.433 [6] regulates water as environmental

resource [7]. On another hand, the Brazilian system regards water as an environmental good. In this situation, water is regarded as an important good, or even as the most important good, by nature's environment. Here, water is analyzed as an ecological good. The use of water entails effects on human life and on ecosystem relationships. From that point of view, the Brazilian constitutional framework determines the regulation by Article 24, VI. This article says that it is the competence from Federal Union, States and counties or cities to regulate together the environmental protection. It is also their competence the environmental defense and pollution control.

As previously said, the Brazilian system has federal, regional, and local rules according to its perception of water as an environmental good [8]. Of course, the local rules must be according to the regional rules and both according to federal rules. However, it is not so simple, and that is why conflicts about the application of the adequate rule for each case are not rare. For instance, there are judicial conflicts concerning whether or not a local rule can forbid an activity or a certain water utilization. It is not always that a federal rule has a preponderance over a local rule. It depends on the kind of rule and their relationship with the environmental good protection. It is possible that the use of water is forbidden in a vulnerable place, and it is allowed in another place.

The Act n. 6.938, by August 31, 1981 [9], regulates the water as environmental good, it also establishes the National Environmental Policy. The act created the National Environmental System. Hence, if a company wants to use water in its activity, it must have an environmental authorization and a sectorial authorization. The first is granted by regulatory agencies, regarding water as environmental resource. The second, considers water as environmental good. It is possible that a company has sectorial license but does not have environmental license. If the local rules are not applicable in the case of the use of water, as environmental resource, after all the counties or cities are not owners of the water, their rules are important in the analysis of environmental license.

3. Conclusions

The Brazilian system is remarkable for its diverse and several normative fields. Regarding the Brazilian legal framework, it is relevant to highlight that water is regulated according to each regulatory field. The federal agency of water is the *Agência Nacional de Águas e Saneamento Básico—ANA*, or National Water and Basic Sanitation Agency. This agency must dialogue with the regional agencies, according to the rules from the National Water Resources Policy and its National Water Resources Management System.

In addition to that, the federal government environmental agency is the *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis—IBAMA*, or the Brazilian Institute for the Environment and Renewable Natural Resources. This environmental agency must keep in touch with the state and local environmental agencies. It is necessary to get coherence into the federative legal framework system.

Sectorial regulations and environmental regulations must walk side by side. In fact, judicial and normative system in Brazil recognized that there is a preponderance of the water as environmental good. But it does not mean that economic needs are regardless. Never. Indeed, it is not possible to think environmental questions without taking into account society's needs. The secret and at the same time the problem is how to make a complex system efficiently work. The problem does not have one correct answer. But in all cases is relevant the participation of federal, regional, and local spheres of government as well as the stakeholders. It is not possible to solve environmental problems or economic problems about environmental resources without complex answers.

Conflict of Interest

There is no conflict of interest.

Funding

This research received no external funding.

References

[1] Brasil, 1988. Constituição da República Federativa do Brasil de 1988 (Portuguese) [Constitution of the Federative Republic of Brazil 1988] [Internet]. Available from: https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm

[2] Purvin, G., 2017. Justiça ambiental, acesso à água e ao saneamento: algumas considerações por ocasião dos vinte anos de edição da Lei n. 9.433/1997 e dos dez anos da Lei n. 11.445/2007. Purvin, G. (Coord.). Direito ambiental, recursos hídricos e saneamento. Estudos em comemoração aos 20 anos da Política Nacional de Recursos Hídricos e aos 10 anos da Política Nacional de Saneamento (Portuguese) [Environmental justice, access to water and sanitation: some considerations on the occasion of the twenty years of National Water Resources Policy and 10 years of National Sanitation Policy. Environmental law, water resources and sanitation. Studies in celebration of 20 years of of National Water Resources Policy and 10 years of National Sanitation Policy]. São Paulo: Letras Jurídicas, 25-47. p. 38.

[3] Agência Nacional de Águas—ANA, 2017. Atlas esgotos: despoluição de Bacias Hidrográficas (Portuguese) [Atlas sewers: depollution of watersheds]. Brasília: ANA.

[4] Brasil. Superior Tribunal de Justiça, 2023 (Portuguese) [Superior Court of Justice]. AREsp n. 1.407.773/RJ, relatora Ministra Assusete Magalhães, Segunda Turma, julgado em 23/5/2023, DJe de 26/5/2023.

[5] Brasil. Superior Tribunal de Justiça, 2019 (Portuguese) [Superior Court of Justice]. AgInt no AREsp 777.724/RJ, Rel. Ministro NAPOLEÃO NUNES MAIA FILHO, PRIMEIRA TURMA, DJe de 01/10/2018; AgInt no AREsp 1.725.379/AL, Rel. Ministra ASSUSETE MAGALHÃES, SEGUNDA TURMA, DJe de 06/04/2021; REsp 1.814.111/SE, Rel. Ministro FRANCISCO FALCÃO, SEGUNDA TURMA, DJe de 18/11/2019.

[6] Brasil, 1997. Lei n. 9.433, de 8 de janeiro de 1997. Institui a Política Nacional de Recursos Hídricos, cria o Sistema Nacional de Gerenciamento de Recursos Hídricos, regulamenta o inciso XIX do art. 21 da Constituição Federal, e altera o art. 1º da Lei nº 8.001, de 13 de março de 1990, que modificou a Lei nº 7.990, de 28 de dezembro de 1989 (Portuguese) [Law n. 9.433, of January 8, 1997. Establishes the National Water Resources Policy, creates the National Water Resources Management System, regulates item XIX of art. 21 of Brazilian Constitution, and amends Art. 1 of Law 8.001, of 13 March 1990, which modified Law 7.990, of 28 December 1989]. Available from: https://www.planalto.gov.br/ccivil_03/leis/l9433.htm#:~:text=Institui%20a%20Pol%C3%ADtica%20Nacional%20de,28%20de%20dezembro%20de%201989

[7] Milaré, E., 2018. Direito do ambiente (Portuguese) [Environmental Law]. Prefácio Ada Pellegrini Grinover. São Paulo: Thomson Reuters Brasil. p. 945.

[8] Antunes, P.B., 2021. Direito Ambiental (Portuguese) [Environmental Law]. São Paulo: Atlas. p. 823.

[9] Brasil, 1981. Lei n. 6.938, de 31 de agosto de 1981. Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação, e dá outras providências (Portuguese) [Law n. 6.938, of August 31, 1981. Provides for the National Environment Policy, its purposes and mechanisms of formulation]. Available from: https://www.planalto.gov.br/ccivil_03/leis/l6938.htm

BILINGUAL PUBLISHING GROUP

Macro Management & Public Policies

https://journals.bilpubgroup.com/index.php/mmpp

ARTICLE

On People's Worries about Becoming a Victim of Events or Conditions Often Blamed on Those up There

***Ingwer Borg*[1*], *Dieter Hermann*[2]**

[1] *Westfälische-Wilhelms-Universität, Münster, 48149, Germany*

[2] *Ruprecht-Karls-Universität, Heidelberg, 69117, Germany*

ABSTRACT

The authors study people's worries about becoming victimized by events and conditions often blamed on "those up there". Excessive worries are bad for people's performance because they lead to risk avoidance and lower self-confidence. In two representative surveys conducted in Germany, it is found that victimization concerns are positively correlated with people's gender, previous victimization, their estimated likelihood of being victimized, their fear of crime, their crime-avoidance behavior, their striving for tradition and security, and their negative attitudes toward crimes. Negative correlations are found for people's education, their striving for universalism, and their social capital. When considering all predictors combined, people's expected likelihood to become victimized is found to be the optimal predictor of victimization concerns. It is recommended that management concentrates on setting realistic levels of such risk estimates to avoid negative effects on people's performance.

Keywords: Worries; Concerns; Fear of crime; Performance management; Personal values

1. Introduction

People are worried about many things. Examples are worries about one's health, about climate change, about hunger in the world, or about things not working out in one's job. A worry is a particular type of anxiety, conceptualized by Schwartz et al. [1] as "an emotionally disturbing cognition that a state of an object … in some domain of life … will become (or become more, or remain) discrepant from its desired state" (p. 311). A person who feels worried about something keeps on thinking about it, over and over

*CORRESPONDING AUTHOR:
Ingwer Borg, Westfälische-Wilhelms-Universität, Münster, 48149, Germany; Email: ingwer.borg@gmail.com

ARTICLE INFO
Received: 31 August 2023 | Revised: 19 October 2023 | Accepted: 27 October 2023 | Published Online: 3 November 2023
DOI: https://doi.org/10.30564/mmpp.v5i4.5940

CITATION
Borg, I., Hermann, D., 2023. On People's Worries about Becoming a Victim of Events or Conditions Often Blamed on Those up There. Macro Management & Public Policies. 5(4): 41-54. DOI: https://doi.org/10.30564/mmpp.v5i4.5940

again, in "preservative cognition" [2].

Worries are often focusing on things the person cannot control. If the person also cares and feels an urge to do something about it, one sometimes speaks of concerns rather than worries. However, the difference between worries and concerns remains gradual, and the concepts are not consistently used in the literature. According to Merriam-Webster, they are even synonymous. We will, therefore, use the terms interchangeably.

We here concentrate on one class of concerns, i.e., those where public institutions or persons are often blamed to be at least partially responsible. Two examples are worries about burglaries in people's neighborhoods or concerns that the economy will go down—both cases where people tend to argue that "*They* should do something about it!" or "*Those up there* are to blame!". Thus, public agents are pressed to respond properly by reducing the problems and/or their probability, if possible, or by convincing the public that the likelihood of the negative circumstances is overestimated, or by helping people to realistically evaluate the problems and making clear what they can do themselves to reduce the risks.

When worries become excessive, people tend to overestimate future dangers and become more likely to see the perceived situation as hopeless with no solution. Worries are also damaging a person's confidence in his/her problem-solving ability. And they lead to perceiving problems as threats rather than as opportunities [3].

An important hypothesis is that victimization worries focusing on different causes are all positively related to each other. That is, the higher a person is concerned about becoming a victim of burglary, for example, the more he/she tends to worry about becoming victimized by political crises. Expressed more formally and in testable terms: All items asking about persons' victimization concerns are non-negatively inter-correlated. This implies that all victimization concerns have a "common object" [4]. This object could be interpreted as "the person's felt security not to be victimized" [5] or simply "the perceived security situation in general" [6]. If all topic-specific victimization concerns are positively related to each other, one may also assume that reducing a person's concerns about topic *X* would spill over to other concerns so that concerns tend to be reduced across the board. Changes in concerns about some topic *X* would therefore have a general effect on the performance of persons.

An important class of victimization concerns are those where others are violating legal norms or committing crimes that harm the individual. Such concerns can be seen as a component of the construct "fear of crime" that has received considerable attention in research [7-9]. Researchers in this field "agree that fear of crime involves feelings, thoughts, and behaviors, all of which are focused on the subjectively conceived threat of criminal victimization" [10]. Fear of crime, thus, is multi-faceted: It comes with certain cognitions (such as ideas about the likelihood of the crime), emotions (generated by the thought of becoming a victim of the crime), and possible actions to prevent or avoid crimes. Only if all three of these components are activated and consistent, fear of crime is given [11]. The three components of fear of crime are, however, not clearly separable. Assuming, for example, that fear-of-crime cognitions lead to negative emotions, and these emotions in turn to avoidance actions, makes sense only within a narrow time span. Actions, for example, if successful, can reduce negative emotions and lower the person's risk assessments [12].

Studies that attempt to explain people's fear of crime identified various variables such as the appearance of their physical environment [13], gender [14], the quality of their social embedding [15], their history of being victimized by crimes [16,17], the degree with which they value security and tradition [17,18], or their acceptance of legal norms [19]. The results are, however, often ambiguous. Some studies report, for example, that fear of crime gets stronger when people get older, while other studies find the exact opposite, or a curvilinear relation, or no significant correlation at all [20,21]. The possible reasons for such results are manifold. Often, the samples are small and not representative, the types of crimes are limited, or only

one predictor is studied in isolation. In this paper, we study large samples that are representative and focus on multiple predictors ranging from demographics to personality constructs. Thus, we can see how the various predictors are interrelated.

Fear of crime is typically measured with some form of a single item ("Is there any area near where you live where you would be afraid to walk alone at night?"). This "standard item" has been criticized mainly because it asks about hypothetical behavior and because it does not specify the reason for being afraid [14,22-25]. Yet, it has been shown that the standard item is at least quite reliable [26], even though it may camouflage the relation between crime-specific fear and age, for example [27,28]. We therefore follow the suggestion to also measure the crime-specific cognitive component (risk assessment) for each crime separately [29].

Extending the scope from fear of crimes to victimization concerns in general, one can predict that psychological variables (such as people's personal values or their attitudes toward delinquent behaviors) should affect all victimization concerns similarly. As to personal values, various authors have found that some of the ten basic values of the Schwartz value theory [30,31] are positively correlated with fear of crime. Persons with a relatively strong emphasis on security, conformity, and tradition—combined into the higher-order value "conservation"—tend to exhibit higher levels of fear of crime, while the opposite is true for persons prioritizing universalism. The reason may be that more is at stake for security-minded persons because the possibility that they may become victimized threatens what they value most, i.e. security. Universalism-oriented persons, on the other hand, have a strong belief in man's inherent goodness and should, therefore, find it less likely to be victimized [1].

Attitudes toward delinquent behaviors are similarly related to fear of crime: Persons who have relatively harsh attitudes should also be more concerned because the negativity of their attitudes indicates the anticipated size of the damages in case the negative events or conditions become real.

This leads us to the following hypotheses:

1) The inter-correlations of victimization concerns that focus on issues where "those up there" can be blamed are all positive. That is, higher concerns about topic *X* imply higher concerns about topic *Y*.

2) Women exhibit higher levels of concern than men. This hypothesis builds on many previous findings in the fear-of-crime domain [19,32,33]. The gender difference is expected to be particularly strong for sex crimes. It is also expected that the difference becomes smaller with increasing age.

3) The structure of different concerns shows that crime-related concerns form a particular neighborhood, separating them from other concerns. We expect concerns about crime issues, political and economic issues, and other issues to lead to separable correlation clusters.

4) Victimization concerns are positively related to gender, people's striving for security and conservation, their general attitudes toward crimes, previous victimization, and all components of fear of crime.

5) Concerns are negatively related to age, education, social capital (trust in police, courts, etc.), and people's universalistic value strength.

6) People's subjective likelihood of becoming victimized is the best predictor of victimization concerns.

2. Methods

2.1 Data

The data of this study come from two representative surveys conducted in two German cities. Both surveys used comprehensive questionnaires with some 300 items focusing on crime, crime prevention, and the Corona pandemic. They also contained numerous demographic and psychological questions. They were conducted in 2019 and 2020 in the cities of Mannheim (MA) and Pforzheim (PF), respectively. The samples were representative random samples of juveniles (aged at least 14 years) and adults, all citizens of these cities, drawn from the resident registers of the respective cities. The surveys were run as a mail survey in PF [34] and as a combination of a

mail and an online survey in MA [19].

Both surveys were anonymous. No incentives were given. Participation was voluntary, based on appeals by the city administration asking the potential respondents in a personal letter to help the city in preventing crime by providing relevant information for effective actions.

The return rates in the MA sample were about 15% in the online survey, and 30% in the mail survey, resulting in 5,198 respondents in the realized sample. The return rate of the PF sample was 33% or 2,230 persons. The demographics of the participants closely matched the demographics in the respective populations, with two minor exceptions. Females are slightly over-represented in both surveys by about 5%. Older persons (aged 40 years or older) are over-represented by about 6%.

2.2 Instruments

For the issues addressed in this paper, we used twelve concern variables in the MA sample and eleven concern variables in the PF sample. As possible predictor variables, we used 94 (MA sample) and 92 (PF sample) variables grouped into nine groups.

Concerns: Both surveys contained various items on people's concerns about becoming victimized by events or conditions that can be seen as caused or at least influenced by public-political agents. They were introduced as follows: "There are many reasons that can cause feelings of insecurity. Please check the following list of items and rate to what extent you feel worried about each of them." The items were: "by political crises", "by economic crises", "to get injured in a traffic accident", "to be harassed by somebody", "to be hit and injured by somebody", "to become victimized by burglary (apartment/house)", "to get mugged and robbed (violent theft)", "to have something stolen (theft, no violence)", "to get raped or sexually attacked", "to become sexually molested", and "to become a victim on social media" [only in the MA sample]. Each issue had to be rated on a 4-point scale ranging from (1) "not worried" to (4) "very worried".

Demographics: Gender (1 = men, 2 = women), age (scored as 1 to 8 for age cohorts "16-19, 20-29, …, 80+), education (1 = lowest to 4 = highest).

History: Victimization of the respondent him-/herself or a member of his/her family within the last twelve months by various crimes. The PF survey presented a list of twelve crimes such as car theft, mugging, sexual harassment, and burglary. The respondent was asked for each crime in turn whether he/she had been victimized by the crime. The MA survey contained a similar list of twelve crimes where the victim was asked whether he/she him-/herself or a family member had been victimized, and eight more crimes that focused on the respondent only. All victimization variables are coded here into one overall variable as "1 = yes" in case *any* of the crimes was checked, and as "0 = no" otherwise.

Likelihood: The crimes addressed by the concerns items were also rated in terms of the probability with which the respondents felt that they would be hit by each respective crime "within the next twelve months in their neighborhood" on a 4-point answer scale ranging from "0 = not likely at all" to "3 = very likely". The topics "political crises", "economic crises", and "social media" were not rated on their likelihood. A person's generalized likelihood score was also computed as his/her mean likelihood rating across the various crimes.

Fear of Crime (emotional): The emotional component of fear of crime was assessed with two items. Item #1 (PF survey): "How often do you think about becoming a victim of crime?" Item #2 (PF survey): "How often are you scared to become a victim of crime when at night outside in your neighborhood?" The answer scale was a 4-point scale from "never" to "very often (almost daily)". The MA survey used two items that were variants of the PF-item #2, asking "at night" and "during daytime", respectively.

Fear of Crime (conative): Two items measured the respondent's behavior aiming at preventing becoming a victim of crime. In the PF survey, it was asked "Have you generally reduced your leisure-time activities in the last twelve months because you were scared to become a victim of crime (e.g., by avoiding certain neighborhoods or by not going out alone

at night)?" (1 = yes, 0 = no). In the MA survey, an additional item was used: "Please try to remember the last time you were out in your neighborhood at night for whatever reason. Did you then avoid certain streets and regions to prevent that something might happen to you?" (1 = if at least one item was supported, 0 = otherwise).

Personality: Both surveys used the IRVS scale [35-37]. The scale asks the respondent to rate the importance of 37 values such as "to respect law and order," "to strive for security," or "to have a high standard of living" from "1 = that is completely unimportant to me" to "7 = that is very important to me". Based on these items, scores for the ten basic items of the Schwartz value theory [31] can be computed, and based on these ten scores, scores for higher-order values (HOV) are derived that aggregate the ten basic values to two dimensions [37]. We here follow Schwartz in computing the score for the HOV "Conservation" by aggregating the observed importance scores of each person for the items "adhering to traditions", "conformity", and "security". For security, we used the single item "striving for security" rather than a composite score of various security-related goals, because this single item leaves it to the respondent how he/she wants to understand the notion of "security" rather than assuming a particular meaning of "security" that consists of components selected by the researcher [19].

Attitudes (social capital): Three components of the respondent's social capital were measured with altogether five items asking about his/her trust (on the 7-point scale 1 = "do not trust at all", …, 7 = "completely trust") to (1) the police, (2) the courts, (3) the city administration, (4) the State, and (5) "your fellow citizens in your neighborhood". The trust variables are looked at individually, summated to yield three types of trust (police/courts, administration/State, fellow citizens), and aggregated over all categories to an overall trust measure.

Attitudes on crimes: Hermann's badness-of-crimes scale [35] was used to measure the respondents' attitudes toward 14 offenses that vary in type and severity of violating legal norms. Examples are "using cocaine", "fare evasion on public transport", "indecent touching of another person", and "ripping off someone's handbag". (Items on very serious crimes such as murder or rape are not part of this scale, because they do not lead to much variance in typical surveys using rating scales.) The item battery was introduced by the following preamble: "Various forms of behaviors can be assessed differently. Please indicate whether you consider the following behaviors "bad" or "not bad". A "1" would mean that you consider the behavior not bad at all, and "7" that you consider it very bad" [38]. Based on the score of this item battery, an overall score for the respondent's attitude toward crimes was computed.

2.3 Statistical methods

All data analyses were carried out within the R environment. The structure of the inter-correlations of the various concerns, and the inter-correlations of the concern items with the predictor variables, was analyzed using multidimensional scaling (MDS). All MDS analyses were run by the R-package smacof [39,40]. We used *Stress-1* to assess the fit of the MDS model and the MDS permutation test [41] to check the solutions' statistical significance. The similarity of MDS solutions was assessed using Procrustean transformations and computing the correlation of the *XY* coordinate values of corresponding points [42]. These values were checked for statistical significance by simulations fitting 500 random point configurations to each other [43].

Step-wise linear regression analyses were used to study how well the dependent variable "overall concern" could be predicted, beginning with the demographic variables, then adding the history-of-victimization variable, then the person's overall estimate of becoming victimized by crimes, etc. For each additional set of variables in the linear model, we report the regression weights (not normalized, because some predictors are simple dichotomies), their significance, plus the explained variance (*R* squared).

3. Results

3.1 Signs of the inter-correlations of the concern items

To test the positive manifold hypothesis, the concern items in both samples were inter-correlated. As predicted, all correlations are positive. In the MA sample, *min(r)* = 0.16, *mean(r)* = 0.53, and *sd(r)* = 0.24. In the PF sample, *min(r)* = 0.18, *mean(r)* = 0.56, *sd(r)* = 0.25. All correlation coefficients are highly significant. This confirms hypothesis #1, indicating that the various concerns have a common object of concern in both samples.

3.2 Concerns and demographics

In both samples, women exhibit a higher level of concern than men, as predicted. This is true for both generalized concerns and for each specific concern. The average concern scores for men and women on the 4-point scale are 2.17 vs. 2.39 in the MA sample and 2.42 vs. 2.72 in the PF sample. The largest gender differences in both samples were found for concerns about harassment and about the two sex crimes (rape/sexual attacks, getting molested). In the MA sample, these differences are 0.28, 0.72, and 0.72. In the PF sample, the corresponding differences are 0.32, 0.73, and 0.79. In both samples, the smallest differences were found for concerns about economic crises (0.07 and 0.10). Every difference in both samples is highly significant (Welsh *t*-tests).

The stronger concerns of women relative to men on sex crimes become smaller with increasing age. In the MA sample, women's concerns about getting raped or sexually attacked correlate with age with –0.24***, and with –0.30*** for getting sexually molested. In the PF sample, these correlations were –0.29*** and –0.31***. For men, the corresponding correlations were –0.03 and –0.02; –0.09** and –0.10***. For the other types of concerns, age shows only small correlations with victimization concerns and no interactions with other predictor variables.

In contrast to age, education is almost unrelated to concerns (see **Table 1**). Persons with higher education tend to be slightly less concerned. The correlations are significant but small.

3.3 The structure of concerns

Because all concerns are positively inter-correlated, they possess a dominant principal component that reflects the general degree of concerns. Additional structure is related to the content of the concerns. Both features can be visualized using multidimensional scaling. **Figure 1** shows the 2-dimensional representations of the issue-specific concerns and the generalized concern in the MA sample (left plot) and the PF sample (right plot). Both plots represent the data well, with significant *Stress* values of 0.14 and 0.11, respectively. The configurations are also highly similar. Measured objectively, one finds that, after Procrustean transformations, the corresponding *X*- and *Y*-coordinates of the points are correlated with 0.979***.

The dashed lines in the MDS plots optimally represent the *level* of the various concerns. They show that points located more towards the North sides of the plots represent more serious concerns. The correlation of the projection scores onto the regression lines and the mean level of concern is *r* = 0.85*** for the MA sample and 0.62* for the PF sample. Hence, the *Y*-axes can be interpreted as "level of concern." The *X*-axis separates the causes of concern into different *types*: On the right-hand side one finds concerns about crimes and legal delinquencies, on the left-hand side there are "political-economic concerns" (top) and "other causes" (traffic accident and victim on social media, if assessed).

3.4 Predictors of concerns: Predictor by predictor

The first column of **Table 1** shows the mean concern values of the MA and the PF samples. The following columns exhibit the correlations of the various predictor variables with concerns of victimization. The cells of the table are marked in red if a coefficient correlates positively with a concern, i.e. if higher values of the predictor tend to go with higher

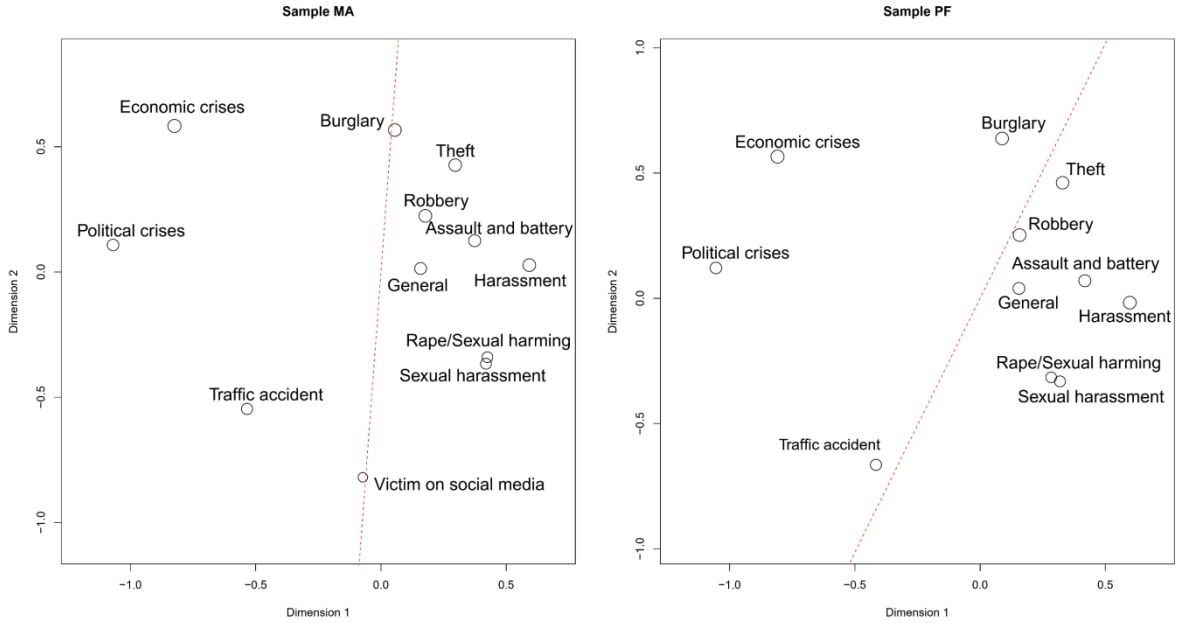

Figure 1. MDS representations of the inter-correlations of the various concern types; size of the points represents the level of concern; the projections of the points onto the dashed line optimally represent the level of concern (high concerns towards the top).

concerns. The cells are marked in green if the predictor is negatively correlated with the concern. The saturation of the colors corresponds to the size of the correlations.

Table 1 shows that there are two sets of predictors: Those that "promote" concerns, and those that "alleviate" concerns. The relation of each predictor to the various concerns has the same sign for all concerns, general or specific—except for age, which is both negatively and positively correlated with concerns. For example, older people are less concerned about becoming harassed and less concerned about burglary.

One notes that the coefficients in **Table 1** are highly similar for both samples, not only regarding their signs but also in their size. Almost all coefficients are significant (non-significant coefficients are shown in italics).

The different relations of age to concerns are due to its interaction with gender. **Table 1** shows that gender correlates positively with sex crimes. Age is negatively correlated with sex-crime concerns for both genders but much more so for women than for men, as discussed above. So, the negative correlation of age with concerns in **Table 1** is mainly generated by women, not by men.

Table 1 shows that persons' emotional and cognitive components of fear of crime are the best single predictors of concerns, even if the concern is not focused on crime but, for example, on traffic accidents. **Table 1** also exhibits that the persons' personality correlates with their level of concerns: Their prioritizing of conservation, particularly their striving for security as a guiding principle in their life, is correlated with higher concern levels, while persons with an universalistic value orientation are relatively less concerned, as predicted. Moreover, persons who have a harsher attitude toward crimes tend to be more concerned in general and in every specific concern type.

Previous victimization is also a fair predictor of people's victimization concerns, with positive correlations even to variables such as concerns about political or economic crises. This shows, once more, that all concerns have a common component.

The social capital variables have a similarly strong correlation with victimization concerns but with opposite signs. The higher people's trust in the police and the State, for example, the lower their concerns.

Personality variables are also significantly related to people's general and specific concerns. **Table**

Table 1. Mean general and specific concern values in MA and PF samples; correlations of predictors (likelihood, gender, etc.) with concerns. Non-significant correlations in italics. Cells marked in green/red = negatively/positively correlated with concerns.

Concern to be victimized	Level of concerns	Gender	Age	Education	Victimized: Family	Victimized: Self	Estimated likelihood	General fear of crime: Emotional	Defensive behavior	Higher order value: Conservation	Basic value: Security	Basic value: Universalism	Trust: Police, courts	Trust: Admin, / State	Trust: Fellow citizens	Badness of crimes
Sample MA																
General	2.29	0.16	–0.04	–0.12	0.16	0.20	0.62	0.53	0.44	0.21	0.23	–0.12	–0.12	–0.21	–0.20	0.15
Political crises	2.25	0.06	0.05	–0.06	0.06	0.07	NA	0.19	0.17	0.05	0.08	*0.01*	–0.12	–0.14	–0.06	0.03
Econom. crises	2.54	0.04	0.07	–0.08	0.07	0.03	NA	0.19	0.19	0.13	0.14	–0.07	–0.10	–0.16	–0.07	0.09
Traffic accid.	2.17	0.06	–0.06	–0.05	0.05	0.06	0.44	0.25	0.19	0.10	0.11	*–0.02*	–0.04	–0.07	–0.11	0.08
Harassment	2.47	0.15	–0.16	–0.05	0.16	0.28	0.46	0.53	0.43	0.16	0.21	–0.13	–0.12	–0.20	–0.23	0.06
Assault/Batt'y	2.34	0.01	–0.07	–0.11	0.16	0.21	0.48	0.49	0.40	0.19	0.20	–0.14	–0.12	–0.20	–0.19	0.10
Burglary	2.47	0.02	0.12	–0.11	0.15	0.10	0.57	0.39	0.33	0.22	0.21	–0.13	–0.06	–0.16	–0.12	0.19
Robbery	2.48	0.04	*0.01*	–0.13	0.16	0.17	0.53	0.49	0.41	0.22	0.22	–0.15	–0.10	–0.20	–0.18	0.16
Theft	2.44	0.06	*0.01*	–0.10	0.18	0.19	0.53	0.46	0.37	0.21	0.20	–0.14	–0.10	–0.19	–0.17	0.15
Rape/Sex.hrm.	2.08	0.35	–0.15	–0.08	0.11	0.20	0.59	0.46	0.37	0.12	0.16	–0.04	–0.08	–0.12	–0.15	0.09
Sex. harassmt.	2.11	0.37	–0.18	–0.06	0.12	0.23	0.64	0.46	0.37	0.10	0.16	–0.03	–0.09	–0.12	–0.16	0.06
Social media	1.84	*0.01*	0.03	–0.13	0.09	0.06	NA	0.23	0.20	0.16	0.10	–0.06	–0.07	–0.11	–0.07	0.13
Sample PF																
General	2.60	0.19	–0.08	–0.06	0.19	0.18	0.58	0.51	0.44	0.26	0.25	–0.15	–0.19	–0.26	–0.19	0.15
Political crises	2.46	0.11	0.13	*–0.01*	0.04	*0.03*	NA	0.18	0.16	0.12	0.11	*0.00*	–0.12	–0.12	*–0.04*	0.07
Econom. crises	2.59	0.06	0.10	*–0.02*	0.06	0.05	NA	0.20	0.18	0.20	0.16	–0.07	–0.16	–0.19	–0.09	0.11
Traffic accid.	2.27	0.08	*–0.03*	–0.04	0.05	0.06	0.42	0.23	0.18	0.15	0.11	–0.11	–0.06	*–0.04*	–0.13	0.10
Harassment	2.72	0.17	–0.20	–0.04	0.19	0.19	0.43	0.48	0.42	0.19	0.23	–0.16	–0.20	–0.26	–0.19	0.08
Assault/Batt'y	2.68	0.08	–0.15	–0.06	0.18	0.19	0.45	0.48	0.40	0.21	0.21	–0.16	–0.19	–0.25	–0.19	0.10
Burglary	2.80	0.10	0.06	*0.00*	0.19	0.14	0.56	0.37	0.33	0.21	0.20	–0.11	–0.12	–0.20	–0.10	0.15
Robbery	2.83	0.08	*–0.02*	–0.07	0.19	0.19	0.50	0.46	0.41	0.23	0.22	–0.14	–0.17	–0.25	–0.16	0.15
Theft	2.64	0.10	*–0.02*	–0.06	0.19	0.18	0.49	0.44	0.38	0.25	0.22	–0.14	–0.16	–0.23	–0.16	0.18
Rape/Sex.hrm.	2.45	0.31	–0.19	–0.07	0.17	0.15	0.55	0.45	0.38	0.17	0.18	–0.11	–0.13	–0.21	–0.17	0.09
Sex. harassmt.	2.46	0.34	–0.21	–0.07	0.17	0.16	0.57	0.47	0.40	0.18	0.20	–0.11	–0.14	–0.22	–0.18	0.09

1 shows their striving for security predicts higher concerns, while universalism as a guiding value is related to lower concerns, as predicted. Finally, the harshness of people's attitudes toward crimes is also significantly correlated with their concerns, i.e., the harsher a person's attitude toward crimes, the more he/she tends to be concerned about becoming a victim, as expected.

3.5 Predictors of concerns combined

Figure 2 shows the structure of the inter-correlations of the various predictors together with generalized concerns for the MA and the PF samples. The *Stress* values of the MDS plots are 0.096 and 0.087 which indicates a good and significant fit. The MA and the PF configurations are highly similar: The correlation of corresponding point coordinates is r = 0.985***.

Based on the coefficients in **Table 1**, the dashed vertical lines partition the MDS configurations into a region (on the left) that contains a point representing general concern (red points) and otherwise only predictors that are positively correlated with general concern. On the right-hand side of the partitioning line are all predictors that are negatively correlated with general concern. The partitioning lines can also be interpreted as discriminant functions: The greater a point's distance from this line, the higher its correlation with general concern.

The plots show that fear of crime and its three components are the best predictors of general concern, followed by the person's history of victimization. Points that are close to the partition lines (e.g., age or education) are significant but poor predictors.

The plots visualize not just the correlations of the predictors with general concern, but also their inter-correlations. For example, age is relatively close to the higher-order value (HOV) conservation in both configurations. This distance reflects that these two variables are positively correlated with each other (0.34*** and 0.30*** in the MA and PF samples, respectively).

3.6 Explaining general concern: Stepwise regression

Table 2 exhibits the results of fitting a set of increasingly complex regression models predicting general concern by various sets of predictors. The choice of the predictors is based on the results in **Figure 2** and on theoretical considerations. First, we look at what cannot be changed (demographics, history of victimization). Then, the likelihood estimates

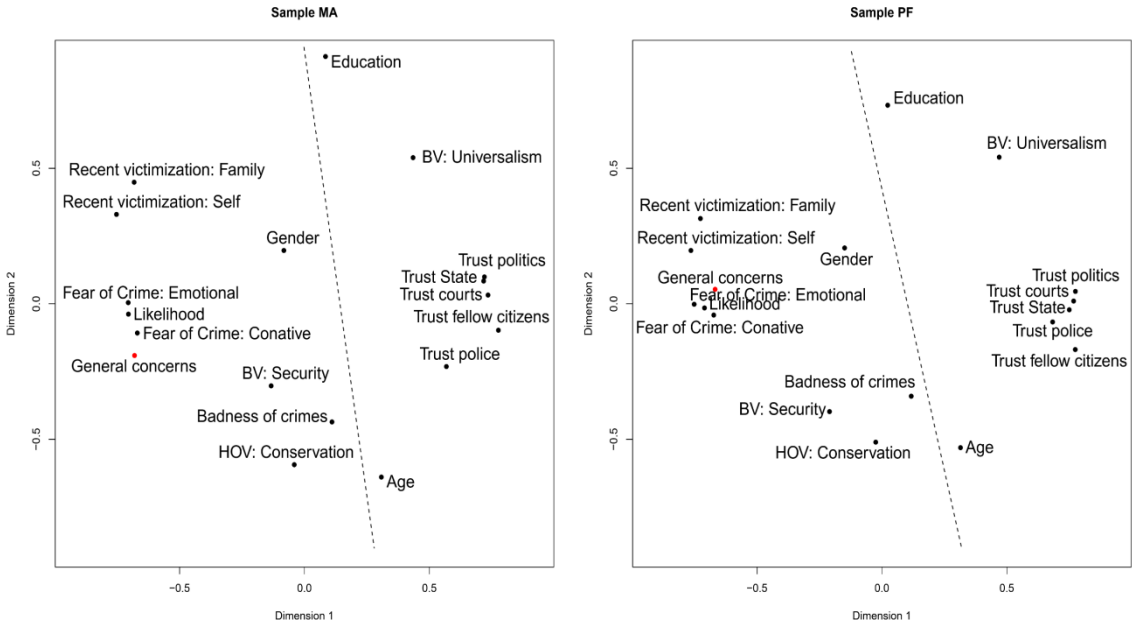

Figure 2. MDS representations of the general concerns variable (red point) and various predictors; dashed lines partition the plane into regions where all predictors are either positively (left sides) or negatively (right sides) correlated with general concerns.

and emotional fear of crime are added, because these variables represent most directly the individual's worries focusing on a set of important risks. Then, we add three additional psychological variables that influence a person's view on things in his/her environment of risks (personal values: security, conformity), his/her general trust in institutions and people (social capital), and his/her general attitude toward crimes.

The regression weights in the table are very similar for the MA and the PF samples. In both samples, the *R*-squared values demonstrate that the demographics by themselves (Model 1) explain only 5% of the variance of general concern. This value doubles when adding the person's victimization history in the last year, but the explained variance remains at a modest 10% value (Model 2). Adding the person's expected likelihood of becoming victimized by crimes leads to a big improvement of the model's accuracy (Model 3): The explained variance is more than tripled to 36%. At the same time, the regression weight of victimization becomes essentially irrelevant. Adding the emotional component of fear of crime (Model 4) adds another 5%. The remaining variables (Models 5-7) are essentially irrelevant, explaining almost no additional variance.

4. Discussion

A valuable take-home message from the above studies and findings is that people's concerns about becoming victimized contain a general component that can be interpreted as their worries about security in general. A person's concerns about the damages caused by some particular event *X* would, therefore, always consist of the person's general level of worrying and his/her specific *X*-related worry. One may assume that the various general and specific worries are

Table 2. Unstandardized regression weights and R-squared values of step-wise regression analyses; seven models predicting generalized victimization concerns.

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
MA sample							
Gender	0.21***	0.21***	0.11***	0.08***	0.08***	0.09***	0.09***
Age	–0.02***	0.00	–0.01**	–0.01**	–0.01**	–0.01*	–0.02**
Education	–0.11***	–0.12***	–0.07***	–0.07***	–0.06***	–0.06***	–0.05***
Recent victimization		0.22***	0.02*	–0.02	–0.02	–0.02*	–0.02*
Likelihood			0.75***	0.55***	0.53***	0.52***	0.51***
Fear of crime: Emotion				0.39***	0.37***	0.37***	0.36***
Personal values					0.06***	0.07***	0.06***
Trust (social capital)						–0.04***	–0.05***
Attitude toward crime							0.06***
R squared	0.05***	0.10***	0.39***	0.44***	0.46***	0.46***	0.46***
PF sample							
Gender	0.28***	0.28***	0.15***	0.12***	0.12***	0.13***	0.12***
Age	–0.03***	–0.02*	–0.02*	–0.02*	–0.03***	–0.03***	–0.04***
Education	–0.05**	–0.06**	–0.03	–0.03	–0.02	–0.02	–0.02
Recent victimization		0.24***	0.03	–0.01	–0.01	–0.02	–0.02
Likelihood			0.65***	0.47***	0.47***	0.46***	0.44***
Fear of crime: Emotion				0.36***	0.35***	0.32***	0.31***
Personal values					0.09***	0.10***	0.07***
Trust (social capital)						–0.06***	–0.07***
Attitude toward crime							0.12***
R squared	0.05***	0.10***	0.36***	0.41***	0.42***	0.43***	0.44***

influencing each other so that increasing or alleviating one would lead to a similar effect on the other.

Victimization concerns are correlated with numerous variables ranging from demographics, the people's history of being victimized, their personal values, their trust in public institutions (social capital), and some of their attitudes such as their attitude toward crimes in general. The best predictors of a person's victimization worries are his/her general emotional fear of crime and his/her defensive behavior aiming at avoiding risky situations. Good predictors of general and more focused worries are also the person's beliefs of the likelihood of crimes in general or of the likelihood of a particular problem to materialize. Indeed, when statistically explaining people's general levels of worries by what the persons expect to possibly happen, the emotional and actional components of worries do not account for much additional variance. From a management's point of view, this is good to know because likelihood beliefs are cognitions that should be more accessible to rational arguments than emotions.

People's concerns are problems that can be relevant to macro management and that require actions. Excessive concerns are negatively impacting people's performance. They are also impeding effective actions that may reduce, eliminate, or avoid circumstances that generate concerns in the first place. Moreover, the types of concerns that we have studied here are those where people expect actions by management or public change agents to reduce the underlying problems. The findings presented here suggest various approaches that should help managers to plan and implement effective actions. In principle, reducing the risk of becoming victimized by a particular circumstance that people perceive as dangerous should also help to alleviate excessive concerns in general. Of course, a necessary side condition is that people truly believe that the risks have been reduced. A more general approach for management is to make clear that excessive concerns are almost always exaggerated because experience shows that of all the negative events a person is concerned about, almost none ever becomes real.

The data studied in this paper led to remarkably similar—indeed: almost identical—results, even though the data were collected in different cities and years. However, both cities (MA and PF) are similar in having relatively high crime rates and large proportions of blue-collar workers and citizens with migration backgrounds. Hence, to what extent the results reported in this paper can be generalized across all of Germany or other European or non-European populations, remains to be studied in future research.

Finally, we would also point out that in the surveys discussed in this paper, we measured comparatively many concerns about crimes. The universe of victimization worries is, however, much larger, with many more types of concerns. It comprises concerns about rising costs of living, excessive regulations, overly constraining laws, technological changes, epidemics, war, terrorism, or the physical and social living environment of the respondent—to name just a few such categories. Based on facet theory [44,45], one can hypothesize that the structure of these concern types leads to a radex, with the concern types as radial regions, and items that address the person's primary environment more to the radex's center in an MDS plot (as in **Figure 1**) than items focusing on the secondary environment [46].

Author Contributions

1. Ingwer Borg: Conceptualization, statistics, writing.

2. Dieter Hermann: Surveys and data.

Conflict of Interest

There is no conflict of interest.

Data Availability Statement

For data access, contact the second author.

Funding

There was no external and internal funding supporting this research.

References

[1] Schwartz, S.H., Sagiv, L., Boehnke, K., 2000. Worries and values. Journal of Personality. 68(2), 309-346.
DOI: https://doi.org/10.1111/1467-6494.00099

[2] Brosschot, J.F., Pieper, S., Thayer, J.F., 2005. Expanding stress theory: Prolonged activation and perseverative cognition. Psychoneuroendocrinology. 30(10), 1043-1049.
DOI: https://doi.org/10.1016/j.psyneuen.2005.04.008

[3] Bredemeier, K., Berenbaum, H., 2008. Intolerance of uncertainty and perceived threat. Behaviour Research and Therapy. 46(1), 28-38.
DOI: https://doi.org/10.1016/j.brat.2007.09.006

[4] Guttman, L., 1977. What is not what in statistics. Journal of the Royal Statistical Society. Series D (The Statistician). 26(2), 81-107.

[5] Borg, I., Bilsky, W., Hermann, D., 2020. Kriminalitätsfurcht und die Einstellung zur Sicherheitslage in der Stadt (German) [Criminality and the attitude toward the security situation in the city]. Kriminologie-Das Online-Journal| Criminology-The Online Journal. (4), 467-490.
DOI: https://doi.org/10.18716/ojs/krimoj/2020.4.1

[6] Hirtenlehner, H., 2006. Kriminalitätsfurcht—Ausdruck generalisierter Ängste und schwindender Gewissheiten? (German) [Fear of crime—Expression of generalized anxiety and of diminishing certainties?]. KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie. 58, 307-331.
DOI: https://doi.org/10.1007/s11575-006-0057-y

[7] Bals, N., 2004. Kriminalität als Stress: Bedingungen der Entstehung von Kriminalitätsfurcht (German) [Criminality as stress: Conditions that generate fear of crime]. Soziale Probleme. 15(1), 54-76.

[8] Stafford, M., Chandola, T., Marmot, M., 2007. Association between fear of crime and mental health and physical functioning. American Journal of Public Health. 97(11), 2076-2081.
DOI: https://doi.org/10.2105/AJPH.2006.097154

[9] Lorenc, T., Clayton, S., Neary, D., et al., 2012. Crime, fear of crime, environment, and mental health and wellbeing: Mapping review of theories and causal pathways. Health & Place. 18(4), 757-765.
DOI: https://doi.org/10.1016/j.healthplace.2012.04.001

[10] Jackson, J., Gouseti, I., 2014. Fear of crime. The encyclopedia of theoretical criminology. Blackwell: London. pp. 1-5.
DOI: https://doi.org/10.1002/9781118517390.wbetc130

[11] Gabriel, U., Greve, W., 2003. The psychology of fear of crime. Conceptual and methodological perspectives. British Journal of Criminology. 43(3), 600-614.
DOI: http://dx.doi.org/10.1093/bjc/azg600

[12] Rader, N.E., May, D.C., Goodrum, S., 2007. An empirical assessment of the "threat of victimization": Considering fear of crime, perceived risk, avoidance, and defensive behaviors. Sociological Spectrum. 27(5), 475-505.
DOI: https://doi.org/1.1080/02732170701434591

[13] Wyant, B.R., 2008. Multilevel impacts of perceived incivilities and perceptions of crime risk on fear of crime: Isolating endogenous impacts. Journal of Research in Crime and Delinquency. 45(1), 39-64.
DOI: https://doi.org/10.1177/0022427807309440

[14] Ferraro, K.F., LaGrange, R.L., 1988. Are older people afraid of crime?. Journal of Aging Studies. 2(3), 277-287.

[15] Krannich, R.S., Berry, E.H., Greider, T., 1989. Fear of crime in rapidly changing rural communities: A longitudinal analysis. Rural Sociology. 54(2), 195.

[16] Boers, K., 1991. Kriminalitätsfurcht. Über den Entstehungszusammenhang und die Folgen eines sozialen Problems (German) [Fear of crime. On the origins and consequences of a social problem]. Centaurus: Pfaffenweiler.

[17] Borg, I., Hermann, D., 2020. Personal values of lawbreakers. Personality and Individual Differences. 164, 110104.
DOI: https://doi.org/1.1016/j.paid.202.110104

[18] Bilsky, W., Hermann, D., 2016. Individual values and delinquency: On considering universals

in the content and structure of values. Psychology, Crime & Law. 22(10), 921-944.
DOI: https://doi.org/1.1080/1068316X.2016.1202250

[19] Borg, I., 2023. On the role of security in the system of personal values: Are conservatives prioritizing security?. Macro Management & Public Policies. 5(2), 1-13.
DOI: https://doi.org/10.30564/mmpp.v5i2.5603

[20] Kury, H., Obergfell-Fuchs, J., Ferdinand, T., 2001. Aging and the fear of crime: Recent results from East and West Germany. International Review of Victimology. 8(1), 75-112.

[21] Ziegler, R., Mitchell, D.B., 2003. Aging and fear of crime: An experimental approach to an apparent paradox. Experimental Aging Research. 29(2), 173-187.
DOI: https://doi.org/1.1080/03610730390176103

[22] Bilsky, W., Wetzels, P., 1997. On the relationship between criminal victimization and fear of crime. Psychology, Crime and Law. 3(4), 309-318.
DOI: https://doi.org/10.1080/10683169708410826

[23] Kury, H., Lichtblau, A., Neumaier, A., et al., 2004. Zur Validität der Erfassung von Kriminalitätsfurcht (German) [On the validity of assessing fear of crime]. Soziale Probleme. 15, 141-165.

[24] Tulloch, M., 2000. The meaning of age differences in the fear of crime. British Journal of Criminology. 40(3), 451-467.

[25] Fattah, E.A., 1993. Research on fear of crime: Some common conceptual and measurement problems. Fear of crime and criminal victimization. Enke: Stuttgart. pp. 45-70.

[26] Schnell, R., Noack, M., 2016. Reliability and stability of the standard fear of crime indicator in a national panel over 14 years. Survey Research Methods. 10(3), 253-265.
DOI: https://doi.org/10.18148/srm/2016.v10i3.6714

[27] Hale, C., 1996. Fear of crime: A review of the literature. International Review of Victimology. 4(2), 79-150.
DOI: https://doi.org/10.1177/026975809600400201

[28] Hirtenlehner, H., Hummelsheim, D., 2015. Kriminalitätsfurcht und Sicherheitsempfinden: Die Angst der Bürger vor dem Verbrechen (und dem, was sie dafür halten) (German) [Fear of crime and feelings of security: People's fear of crimes (and of what they consider crimes)]. Viktimisierungsbefragungen in Deutschland. 1, 458-487.

[29] Reuband, K.H., 2000. Der "Standardindikator" zur Messung der Kriminalitätsfurcht-in "skandalöser Weise" unspezifisch und in der Praxis dennoch brauchbar? (German) [The "standard indicator" for measuring fear of crime-"scandalously" unspecific but still useful in practice?]. Monatsschrift für Kriminologie und Strafrechtsreform. 83(3), 185-195.
DOI: https://doi.org/10.1515/mks-2000-00024

[30] Schwartz, S.H., 1992. Universals in the content and structure of values: Theory and empirical tests in 20 countries. Advances in experimental social psychology. Academic Press: New York.

[31] Schwartz, S.H., 2012. An overview of the Schwartz theory of basic values. Online Readings in Psychology and Culture. 2(1), 11.
DOI: https://doi.org/10.9707/2307-0919.1116

[32] Stanko, E., 2013. Intimate intrusions: Women's experience of male violence. Routledge: London.
DOI: https://doi.org/10.4324/9780203521014

[33] Mark, W., 1984. Fear of victimization: Why are women and the elderly more afraid?. Social Science Quarterly. 65(3), 681.

[34] Hermann, D., Wachter, E., 2020. Pforzheimer Sicherheitsaudit 2020 (German) [Security audit 2020 in Pforzheim] [Internet]. Institut fuer Kriminologie: Uni Heidelberg. Available from: https://www.kommunale-kriminalpraevention.de/fileadmin/user_upload/kkp/pdfs/Gutachten_PF_Sicherheitsaudit-2020.pdf

[35] Hermann, D., 2003. Werte und Kriminalität. Konzeption einer allgemeinen Kriminalitätstheorie (German) [Values and criminality. Conception of a general theory of criminality]. Westdeutscher Verlag: Wiesbaden.

[36] Hermann, D., 2014. Individuelle reflexive Werte (German) [Individual reflexive values]. Zusam-

menstellung sozialwissenschaftlicher Items und Skalen. GESIS: Mannheim, Germany.

[37] Borg, I., Hermann, D., Bilsky, W., et al., 2019. Do the PVQ and the IRVS scales for personal values support Schwartz's value circle model or Klages' value dimensions model?. Measurement Instruments for the Social Sciences. 1(1), 1-14. DOI: https://doi.org/1.1186/s42409-018-0004-2

[38] Borg, I., Hermann, D., 2023. Attitudes toward crime (s) and their relations to gender, age, and personal values. Current Research in Behavioral Sciences. 4, 100111. DOI: https://doi.org/10.1016/j.crbeha.2023.100111

[39] De Leeuw, J., Mair, P., 2009. Multidimensional scaling using majorization: SMACOF in R. Journal of Statistical Software. 31, 1-30. DOI: https://doi.org/10.18637/jss.v031.i03

[40] Mair, P., Groenen, P.J., de Leeuw, J., 2022. More on multidimensional scaling and unfolding in R: smacof version 2. Journal of Statistical Software. 102, 1-47. DOI: https://doi.org/10.18637/jss.v102.i10

[41] Mair, P., Borg, I., Rusch, T., 2016. Goodness-of-fit assessment in multidimensional scaling and unfolding. Multivariate Behavioral Research. 51(6), 772-789.

[42] Borg, I., Mair, P., 2022. A note on Procrustean fittings of noisy configurations. Austrian Journal of Statistics. 51(4), 1-9.

[43] Borg, I., Groenen, P.J.F., Mair, P., 2018. Applied multidimensional scaling and unfolding. Springer: New York.

[44] Borg, I., Shye, S., 1995. Facet theory: Form and content. Sage: Newbury Park, CA.

[45] Shye, S., Elizur, D., Hoffman, M., 1994. Introduction to facet theory: Content design and intrinsic data analysis in behavioral research. Sage Publications, Inc.: Thousand Oaks, CA.

[46] Levy, S., Guttman, L., 1989. The conical structure of adjustive behavior. Social Indicators Research. 21, 455-479. DOI: https://doi.org/10.1007/BF00513456

BILINGUAL PUBLISHING GROUP
Tel:+65 65881289
E-mail: contact@bilpublishing.com
Website:https://journals.bilpubgroup.com

2661-3360 04
9 772661 336231