

## INTRODUCTION \*

The law is not a closed logical system. As such, we must recognise it as an open system that, when devising solutions, is constantly seeking to predict and identify their consequences.<sup>1</sup> It is therefore natural for legal scholars to seek to refine their understanding of behavioural influences. This is because the outcomes generated by legal rules are always

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\* This study is based on a reworked translation of the book published in Italian by Giappichelli in 2025 entitled “Integrare la tutela giuridica dell’ambiente con le scienze comportamentali”.

<sup>1</sup> An understanding of legal rules that focused on the analysis of their effects was a characteristic feature of renowned scholars of the economic analysis of law such as G. CALABRESI, *The Costs of Accidents: A Legal and Economic Analysis*, Yale University Press, New Haven, 1970; R. POSNER, *The Problems of Jurisprudence*, Harvard University Press, Cambridge Ma., 1993; IDEM, *Overcoming Law*, Harvard University Press, Cambridge Ma., 1996; for a general overview of the approach, see *inter alia* F. DENOZZA, *Norme efficienti. L’analisi economica delle regole giuridiche*, Giuffrè, Milan, 2002; P. TRIMARCHI, *L’analisi economica del diritto. Tendenze e prospettive*, in *Quadrimestre*, 1987, 563; for a study engaging with the relationship between rules and consequences in the field of administrative law, G. CORSO, M. DE BENEDETTO, N. RANGONE, *Diritto amministrativo effettivo*, il Mulino, Bologna, 2022; L. TORCHIA, *I nodi della Pubblica Amministrazione*, Editoriale Scientifica, Naples, 2016; M. DE BENEDETTO, *Effective Law from a Regulatory and Administrative Law Perspective*, in *European Journal of Risk Regulation*, 2018, 9, 391 et seq.; N. RANGONE, M. DE BENEDETTO, *L’effectivité des règles et des décisions administratives*, in *Le future du droit administratif*, edited by J.B. AUBY, LexisNexis, Paris, 2019, 235 et seq. A general study on the interactive mechanisms that can help to explain the efficacy of legal rules, drawing on game theory, has been carried out by K. BASU, *The Republic of Beliefs: A New Approach to Law and Economics*, Princeton University Press, Princeton N.J., 2018; on the interplay between game theory and behavioural science see also M. HOFFMAN, E. YOELI, *Hidden Games: The Surprising Power of Game Theory to Explain Irrational Human Behaviour*, Basic Books, New York, 2022.

mediated through behaviour, the dynamics of which are, quite simply, the raw material of the law.<sup>2</sup>

Ross Ashby taught us, coining the expression “Law of Requisite Variety”, that the variety in the control system must be equal to or greater than the variety in the system being controlled.<sup>3</sup>

This observation implies to the legal practitioner that the system of legal remedies must be just as varied and dynamic as the reality that it seeks to control.<sup>4</sup>

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<sup>2</sup> R. VIALE, L. MACCHI, nella *Prefazione ad Analisi comportamentale delle politiche pubbliche*, edited by R. VIALE, L. MACCHI, il Mulino, Bologna, 2021, 15 correctly note that “*if the law is to be successful in terms of its normative effect it must take account of how the citizen mentally represents the norm, along with the effect of the citizen’s prior beliefs and how those effects determine subsequent behaviour. In other words, it must consider how individuals react psychologically to the norm, in the sense of embracing or rejecting its goals, based on how it is interpreted by people as well as the cognitive and emotional effects on their behaviour*”. Unfortunately, the authors continue, our lawmakers in actual fact “*adopt a model of the homo juridicus akin to Skinner’s pigeon (...) The individual citizen’s behaviour is directed through reinforcements and sanctions. Laws and other instruments used by policymakers need not bother to incorporate any representation of mental activity, of emotional and cognitive aspects and how external information is represented, interpreted and turned into reasons for action. If lawmakers wish to achieve an objective, they must concentrate on the structure of sanctions (such as for instance fines and penalties) as well as inducements (such as economic incentives)*”. Turning to the core nucleus of the study of economics they add that “*the model of the Homo Oeconomicus (or Richard Thaler’s Homo Economicus) is no better (...): the mind is an empirically empty vessel, though one that is fortunately full of algorithms for maximising benefit (...) Cognitive, emotional and physical considerations are of no interest as they are regarded solely as negligible disturbance effects*”.

<sup>3</sup> See W. ROSS ASHBY, *An Introduction to Cybernetics*, Chapman & Hall, London, 1956, <http://pcp.vub.ac.be/books/IntroCyb.pdf>, 202 et seqq.; an illustration applied to social systems is presented in M. BOISOT, B. MCKELVEY, *Complexity and Organization-Environment Relations: Revisiting Ashby’s Law of Requisite Variety*, in *The SAGE Handbook of Complexity and Management*, edited by P. ALLEN, S. MAGUIRE, B. MCKELVEY, Sage Pub., London, 2011, 279 et seqq.; and subsequently developed in Y. BAR YAM, *Multiscale Variety in Complex Systems*, in *Complexity*, Vol. 9, issue 4, 2004, 37 et seqq.; A. GANDOLFI, *Vincere la sfida della complessità*, FrancoAngeli, Milan, 2008, *passim*.

<sup>4</sup> Metaphorically speaking, just as an astronomical telescope must cover a broad

Behavioural science<sup>5</sup> – which has attracted the attention of legal

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field of observation, at least in terms of the area of space that is to be explored, there is no doubt that the law must be capable of understanding and addressing the spectrum of variables that influence behaviour if it is to pre-empt and direct the consequences of legal constraints, and hence the behaviour brought about by them. For further references and comments see M. CAFAGNO, *Principi e strumenti di tutele dell'ambiente. Come sistema adattativo, complesso, comune*, Giappichelli, Turin, 2007, *passim*. *Il pensiero di Giuseppe Pericu sull'ambiente*, in *Il diritto amministrativo tra ordine sistematico e realtà economico sociale*, edited by E. BRUTI LIBERATI, M. CAFAGNO, L. PISCITELLI, M. RAMAJOLI, Giappichelli, Turin, 2024, 17 et seqq.; IDEM, *Principi e strumenti di tutele dell'ambiente. Come sistema adattativo, complesso, comune*, Giappichelli, Turin, 2007, *passim*.

<sup>5</sup> Recalling for the moment only a few general works, which will be supplemented by further references below in this study, at this juncture it is sufficient to mention D. KAHNEMAN, *Thinking, Fast and Slow*, Penguin, 2011; D. KAHANEMAN, O. SIBONY, C. SUNSTEIN, *Noise*, William Collins, 2021; R.H. THALER, C.R. SUNSTEIN, A. OLIVERI, *Nudge: Improving Decisions About Health, Wealth and Happiness. The Final Edition*, Penguin, 2022; R.H. THALER, *Misbehaving*, Penguin, 2016; M. HALLSWORTH, E. KIRKMAN, *Behavioral Insights*, MIT Press, Cambridge, Ma., London, 2020; M. HALLSWORTH, *A Manifesto for Applying Behavioral Science*, The Behavioural Insights Team, London, 2023, now available at [https://www.bi.team/wp-content/uploads/2023/04/BIT\\_Manifesto.pdf](https://www.bi.team/wp-content/uploads/2023/04/BIT_Manifesto.pdf); R. SUNSTEIN, *Human Agency and Behavioral Economics. Nudging Fast and Slow*, Palgrave Macmillan, Cham, 2017; R. SUTHERLAND, *Alchemy: The Surprising Power of Ideas That Don't Make Sense*, WH Allen, London, 2019; R. VIALE, *Oltre il nudge*, il Mulino, Bologna, 2018; R. VIALE, *Nudging*, MIT Press, Cambridge Ma., London, 2022; E. ANGNER, *A Course in Behavioral Economics*, Red Globe Press, London, 2020; for a more specific focus on legal applications, see *Nudge and the Law: A European Perspective*, edited by A. ALEMANN, A. SIBONY, Hart Pub Ltd, Oxford, 2015; *The Oxford Handbook of Behavioral Economics and the Law*, edited by E. ZAMIR, D. TEICHMAN, Oxford University Press, Oxford, 2014; C. JOLLS, C. SUNSTEIN, R. THALER, *A Behavioral Approach to Law and Economics*, in *Behavioral Law and Economics*, edited by C. SUNSTEIN, Cambridge University Press, Cambridge UK, 2000, 13 et seqq.; E. PICOZZA, *Neurolaw: an Introduction*, Springer, Cham, 2018; F. TORMEN, *Neuroscienze cognitive applicate al diritto*, Mimesis, Milan, 2024; F. VELLA, *Diritto ed economia comportamentale*, il Mulino, Bologna, 2023; E. ZAMIR, D. TEICHMAN, *Behavioral Law and Economics*, Oxford University Press, New York, 2018; G. LOEWENSTEIN, N. CHATER, *The I-Frame and the S-Frame: How Focusing on Individual-Level Solutions Has Led Behavioral Public Policy Astray*, in *Behavioral and Brain Sciences*, Vol. 46, 2023, 147 et seqq.

scholars above all in papers focusing on “nudges”,<sup>6</sup> even though in my view this is only one piece of a much richer mosaic – brings together cognitive science, psychology and economics in an effort to understand and explain how cognitive, emotional, social and cultural factors influence choices.<sup>7</sup>

These disciplines invite us to give proper weight to the fact that decisions are often made on the basis of heuristics or implicit and emotive processes, rather than informed and rational calculations.<sup>8</sup>

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In relation to public law and administrative law see *Analisi comportamentale delle politiche pubbliche*, edited by R. VIALE, L. MACCHI, cit.; *Behavioral Public Policy in a Global Context*, edited by M. SANDERS, S. BHANOT, S. O’FLAHERTY, Palgrave Macmillan, Cham, 2023; M. DE BENEDETTO, M. MARTELLI, N. RANGONE, *La qualità delle regole*, il Mulino, Bologna, 2011, 47 et seqq.; N. RANGONE, *Making Law Effective: Behavioural Insights Into Compliance*, in *European Journal of Risk Regulation*, 2018, Vol. 3, 483 et seqq.; IDEM, *Tools for effective law: a focus on nudge and empowerment*, in *Concorrenza e mercato*, 2017, Vol. 25, 195 et seqq.

H.A. SIMON, *Reason in Human Affairs*, Stanford University Press, Stanford Ca., 1983; IDEM, *Models of Bounded Rationality*, Vols. 1 and 2, MIT Press, Cambridge Ma., 1982 has is still highly relevant. Further works will be cited below.

<sup>6</sup> See *inter alia* R.H. THALER, C.R. SUNSTEIN, A. OLIVERI, *Nudge*, cit.; R. VIALE, *Oltre il nudge*, cit.; IDEM, *Nudging*, cit.; this issue is developed within the context of the law in *Nudge and the Law: A European Perspective*, edited by A. ALEMANNO, A. SIBONY, cit.; S. CASSESE, *Exploring the Legitimacy of Nudging*, in *Choice Architecture in Democracies*, edited by A. KEMMERER, C. MÖLLERS, M. STEINBEIS, G. WAGNER, Nomos, Baden-Baden, 2016, 241 et seqq., available at <https://images.irpa.eu/wp-content/uploads/2011/10/Exploring-the-Legitimacy-of-Nudging-a-Matter-of-Balancing1.pdf>; N. RANGONE, *Tools for effective law: a focus on nudge and empowerment*, in *Concorrenza e mercato*, cit.; A. ZITO, *La nudge regulation nella teoria giuridica dell’agire amministrativo. Presupposti e limiti del suo utilizzo da parte delle pubbliche amministrazioni*, Editoriale Scientifica, Naples, 2021; M. BARBERA, *Il nudge e le condizioni della sua applicazione nello stato liberale*, in *Dalle regole ai comportamenti. Conversazioni in tema di amministrazione e persuasione*, edited by M. CAFAGNO, E. BOSCOLO, C. LEONE, M. BARBERA, M. FAZIO, G. CAVALIERI, Mimesis, Milan, 2022, 19 et seqq.

<sup>7</sup> One of the most captivating and effective introductions to this issue is provided by R. SUTHERLAND, *Alchemy: The Surprising Power of Ideas That Don’t Make Sense*, cit.

<sup>8</sup> M. HALLSWORTH, E. KIRKMAN, *Behavioral Insights*, cit.; *Analisi comportamentale delle politiche pubbliche*, edited by R. VIALE, L. MACCHI, cit., *passim*; D.

In my view, this offers a promising perspective for studying something – the environment – that on account of its characteristics represents a major challenge for our cognitive apparatus throughout each stage of the decision making process.<sup>9</sup>

It may well be the case that environmental prejudice is often not the result of cognitive dazzle or unconscious errors, but rather lucid and self-interested estimates based on partisan cost-benefit analysis.

Nonetheless, this does not alter the fact that cognitive and behavioural limits are still joint causes of collective inertia, the weakness of institutional relations, and the perpetuation of individual actions the collective impact of which is anything but marginal.<sup>10</sup>

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KAHANEMAN, *Thinking, Fast and Slow*, cit.; R.H. TAHLER, *Misbehaving*, cit.; F. TORMEN, *Neuroscienze cognitive applicate al diritto*, cit.; R. VIALE, *Nudging*, cit.

Within the Italian literature, for a ground-breaking, full-spectrum analysis of law and neuroscience, see E. PICOZZA, *Neurolaw: an Introduction*, cit., *passim*; more recently IDEM, *Possono le neuroscienze contribuire a formare una amministrazione pubblica migliore?*, in *Dalle regole ai comportamenti*, cit., 374 et seqq.

<sup>9</sup>From the moment they are perceived, it is for example clear that environmental risks that come to light or accumulate gradually over time tend not to be noticed, especially in the face of current challenges. Indeed, whereas environmental law originally focused on tangible phenomena – such as smog, marine dumping and polluted beaches – current problems such as climate change, the loss of biodiversity and toxic chemicals have a long-term, global reach which, despite their severity, makes it more difficult to assess them. *Amplius infra*. When one moves to the assessment stage, the scales normally tip in favour of the solutions that offer the most immediate benefits, to the detriment of those with consequences in the distant future. Risk averseness, inertia and social conformity take the upper hand when it comes to deciding. During the implementation phase, the tendency to procrastinate and the difficulty in following commitments over the long term both have the effect of widening the gap between stated intentions and actual behaviour.

On all of these points, see H. RANKINE, D. KHOSRAVI, *Applying Behavioural Science to Advance Environmental Sustainability*, United Nations ESCAP, Environment and Development Division, Bangkok, November 2021.

<sup>10</sup>T. PARK, K. LONDAKOVA, I. BRENNAN, A. SCHEIN, J. REYNOLDS, E. WHINCUP, E. CHAN, M. PELENUR, D. HALPERN, *How to Build a Net Zero Society. Using Behavioural Insights to decarbonise Home Energy, Transport, Food, and Material Consumption*, The Behavioural Insights Team, London, 2023, [https://www.bi.team/wp-content/uploads/2023/01/How-to-build-a-Net-Zero-society\\_Jan-2023-1.pdf](https://www.bi.team/wp-content/uploads/2023/01/How-to-build-a-Net-Zero-society_Jan-2023-1.pdf); RARE

These limits leave us exposed to the risk of deceptive manipulation of communication, frustrating our ability to aggregate an electoral response that is capable of sanctioning or at the very least combatting short-termism and selfishness, both within politics and among interest groups, encouraging lifestyles that are incompatible with sustainability requirements.<sup>11</sup>

It should be added that judges and officials responsible for applying and interpreting environmental law in turn make decisions based on a combination of reflexive thought and emotional factors. As such, they are not themselves immune to bias, which also in this way ends up having an impact on the real scope of judicial remedies.

Interest in behavioural science has grown exponentially within debates into public policies thanks to their affect in moulding individual behaviour. However, as has been pointed out by the Behavioural Insights Team in its report on “Behavioural Government”,<sup>12</sup> behavioural science can also offer promising results when seeking to understand why political decision makers and administrative officials make the decisions they do.<sup>13</sup>

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AND THE BEHAVIOURAL INSIGHTS TEAM, *Behavior Change For Nature: A Behavioral Science Toolkit for Practitioners*, Rare, Arlington Va., 2019, *passim* and chapter 1; A. BALMFORD, R.B. BRADBURY *et al.*, *Making more Effective Use of Human Behavioural Science in Conservation Interventions*, in *Biological Conservation*, Vol. 261, 2021, article 109256.

<sup>11</sup> On this issue see *inter alia* P. VIDALI, *La negazione ecologica*, Mimesis, Milan, 2024, 141 et seqq.

<sup>12</sup> M. HALLSWORTH, M. EGAN, J. RUTTER, J. MCCRAE, *Behavioural Government. Using Behavioural Science to Improve How Governments Make Decisions*, The Behavioural Insights Team, London, 2018, currently available at <https://www.bi.team/wp-content/uploads/2018/08/BIT-Behavioural-Government-Report-2018.pdf>; the OECD report, *LOGIC: Good Practice Principles for Mainstreaming Behavioural Public Policy*, OECD Publishing, Paris, 2024, currently available at <https://doi.org/10.1787/6cb52de2-en>, describes and supports a method aimed at putting the symbiosis between behavioural science and government action on a structural footing (LOGIC stands for Leadership, Objectives, Governance, Integration and Capacity).

<sup>13</sup> See e.g. N. RANGONE, *Errori cognitivi e scelte di regolazione*, in *Analisi Giuridica dell'Economia*, 1/2012, 1 et seqq.; *amplius infra*.

Although dialogue between administrative law and behavioural insights has not yet become particularly developed in Italy,<sup>14</sup> it is becoming increasingly widespread in other countries.<sup>15</sup>

It is a well-known fact that the Government of the United States has laid the groundwork for the “institutionalisation” of behavioural science.<sup>16</sup>

In an executive order issued in 2015, then President Obama directed

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<sup>14</sup> R. VIALE, L. MACCHI, *Analisi comportamentale delle politiche pubbliche, Prefazione*, cit., 10.

<sup>15</sup> See *inter alia* *Behavioral Public Policy in a Global Context*, edited by M. SANDERS, S. BHANOT, S. O’ FLAHERTY, Palgrave Macmillan, Cham, 2023, *passim*; H. RANKINE, D. KHOSRAVI, *op. cit.*; *Nudge and the Law: A European Perspective*, edited by A. ALEMANNO, A. SIBONY, cit.; A.M. FABBRI, M. FAURE, *Toward a “Constitution” for Behavioral Policy-Making*, in *Int. Rev. Econ.*, 2018, 65, 241 et seqq.; M. FAZIO, *Esperienze comparate di Nudge Units e Behavioral Insights Teams*, in *Dalle regole ai comportamenti*, cit., 99 et seqq.; I. IVOI, *La cerniera. La spinta gentile al servizio della sostenibilità*, Pacini Editore, Pisa, 2024; F. TORMEN, *Neuroscienze cognitive applicate al diritto*, cit., *passim*, R. VIALE, *Nudging*, cit., *passim*.

The *Behavioral Public Administration* school of thought was created out of the interaction between traditional theories of public administration on the one hand and individual and group psychological analysis on the other, with the aim of explaining how cognitive, emotional and social factors influence public action; see amongst the many studies in this area M. ALEKSOVSKA, T. SCHILLEMANS, S. GRIMMELIKHUIJSEN, *Lessons from Five Decades of Experimental and Behavioral Research on Accountability: A Systematic Literature Review*, in *Journal of Behavioral Public Administration*, 2(2), 2019, 1 et seqq.; S. GRIMMELIKHUIJSEN, S. JILKE, A. LETH OLSEN, L. TUMMERS, *Behavioral Public Administration: Combining Insights from Public Administration and Psychology*, in *Public Administration Review*, 77(1), 2016, 45 et seqq.; G. TUMMERS, A. LETH OLSEN, S. JILKE, S.G. GRIMMELIKHUIJSEN, *Introduction to the Virtual issue on Behavioral Public Administration*, in *Journal of Public Administration Research and Theory*, 2016, available at [www.oxfordjournals.org/our\\_journals/jopart/vi\\_behavioralpublicadministration](http://www.oxfordjournals.org/our_journals/jopart/vi_behavioralpublicadministration); the approach acts on the call of pioneers such as Herbert Simon and Dwight Waldo to look “inside” institutions, incorporating analysis of real decision making processes into classical macro perspectives. For instance, concepts such as transparency, representative bureaucracy and public service motivation are tested empirically using experimental methods and metrics from psychology in order to understand and improve administrative reforms.

<sup>16</sup> See M. FAZIO, *Esperienze comparate di Nudge Units e Behavioral Insights Teams*, cit., 99 et seqq.

US federal agencies to “use behavioral science insights to better serve the American people”.<sup>17</sup>

This Order led to the creation of the Social and Behavioural Sciences Team (SBST) – comprised of behavioural scientists, public officials and political decision makers – within the National Science and Technology Council charged with the task of providing advice and support to federal agencies.<sup>18</sup>

Various countries around the world have made considerable efforts, including organisational investments. In some cases this has involved the establishment of actual public agencies, and in others accredited private operators or public-private partnerships (sometimes stable and sometimes only temporary) responsible for delivering particular projects. These bodies are tasked with facilitating input from scientific research and administrative practice into the policy making process, as well as assisting public bodies and officials in the field.<sup>19</sup>

Examples may be found in the UK with the creation of the now popular Behavioral Insight Team (BIT),<sup>20</sup> although also in France, Germany, India, Japan, Qatar, Chile, Canada, the Netherlands, Singapore and Australia,<sup>21</sup> as well as the World Bank,<sup>22</sup> the United

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<sup>17</sup> <https://obamawhitehouse.archives.gov/the-press-office/2015/09/15/executive-order-using-behavioral-science-insights-better-serve-american>.

It is also worth noting that various federal rule systems had previously already engaged with the approach thanks to the initiative pursued by the White House’s OIRA (*Office of Information and Regulatory Affairs*), which had been led since 2009 by Cass Sunstein himself.

<sup>18</sup> For the annual reports, which describe the body’s activities, see <https://sbst.gov>.

<sup>19</sup> See *Behavioral Public Policy in a Global Context*, edited by M. SANDERS, S. BHANOT, S. O’ FLAHERTY, cit.; F. CAVASSINI, F. NARU, *L’approccio comportamentale nel mondo*, in *Analisi comportamentale delle politiche pubbliche*, cit., 347 et seqq.; M. HALLSWORTH, M. EGAN, J. RUTTER, J. MCCRAE, *Behavioural Government*, cit.; R. VIALE, *Oltre il Nudge*, cit.

<sup>20</sup> Further information can be found in the documentation available on the website <https://www.bi.team>.

<sup>21</sup> <https://behaviouraleconomics.pmc.gov.au/>.

<sup>22</sup> See the recent L.A. MANNING, A.G. DALTON, Z. AFIF, R. VAKIS, F. NARU,

Nations,<sup>23</sup> the OECD<sup>24</sup> and European institutions,<sup>25</sup> to name only the most prominent examples.<sup>26</sup>

As early as 2016, a report commissioned by the European Commission identified more than two hundred instances of structures or initiatives created by the Member States in the most disparate areas, such as competition, consumer protection, employment, energy, health, finance, tax and transport.<sup>27</sup>

In Italy too, a Behavioural Analysis Team (*Team di Analisi Comportamentale*, TAC) has recently been set up and tasked with supporting the work and organisation of the public administration.<sup>28</sup>

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*Behavioral Science around the World*, Vol. II, *Profiles of 17 International Organizations*, World Bank, Washington, 2020, <https://documents1.worldbank.org/curated/en/453911601273837739/pdf/Behavioral-Science-Around-the-World-Volume-Two-Profiles-of-17-International-Organizations.pdf>.

<sup>23</sup> UNITED NATIONS, *Behavioural Science Report*, 2023, available at <https://www.uninnovation.network/behavioural-science>; *ibid.* also UNITED NATIONS, *Practitioner's Guide to Getting Started with Behavioural Science*, 2022; UNEP, *Behavioural Insights at the United Nations. Achieving Agenda 2030*, 2016, available at <https://www.undp.org/>; UNEP, *Nudge to Action: Behavioural Science for Sustainability*, 2017, <https://www.unep.org/news-and-stories/story/nudge-action-behavioural-science-sustainability>; H. RANKINE, D. KHOSRAVI, *Applying Behavioural Science to Advance Environmental Sustainability*, *cit.*

<sup>24</sup> OECD, *Behavioural Insights and Public Policy Lessons from Around the World*, 2017; OECD, *Behavioural Insights and Organisations: Fostering Safety Culture*, OECD Publishing, Paris, 2020, <https://doi.org/10.1787/e6ef217d-en>; OECD, *Delivering Better Policies Through Behavioural Insights: New Approaches*, OECD Publishing, Paris, 2019, <https://doi.org/10.1787/6c9291e2-en>; OECD, *LOGIC: Good Practice Principles for Mainstreaming Behavioural Public Policy*, *cit.*

<sup>25</sup> M. BAGGIO, E. CIRIOLO, G. MARANDOLA, *L'analisi comportamentale nella Commissione europea*, in *Analisi comportamentale delle politiche pubbliche*, *cit.*, 329 et seqq.

<sup>26</sup> M. HALLSWORTH, E. KIRKMAN, *Behavioral Insights*, MIT Press, Cambridge, Ma., London, 2020; J. PETER, *How Far to Nudge. Assessing Behavioural Public Policy*, Edward Elgar Pub., Cheltenham, 2018.

<sup>27</sup> J. DESSART, J.L. SOUSA, S.R. ALMEIDA, E. CIRIOLO, *Behavioural Insights Applied to Policy – Application to specific policy issues and collaboration at EU level*, Workshop Report, Publications Office of the European Union, Brussels, 2016.

<sup>28</sup> <https://performance.gov.it/team-di-analisi-comportamentale/>; I. IVOI, *La cerniera*, *cit.*, *appendix*.

An updated review published by the OECD now identifies more than 300 institutions in 63 countries that apply behavioural science in the area of public policy.<sup>29</sup>

Many studies and applications of behavioural insights are focused specifically on the environmental sector, and will be considered in the remainder of this study.<sup>30</sup>

In order to avoid any risk of misunderstanding it is important to be clear about one thing: I do not seek to suggest that inadequate environmental protection is a simple knock-on effect of individual bias.

Rather, I propose that we should adopt a broader perspective that draws the necessary implications, including in cognitive terms, of the recognition of the fact that the environment is a complex system dominated by relationships of interdependence. Moreover, at the same time

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<sup>29</sup> For updated mapping, see <https://oecd-opsi.org/blog/mapping-behavioural-insights/>.

<sup>30</sup> *New Perspectives for Environmental Policies Through Behavioral Economics*, edited by F. BECKENBACH, W. KAHLENBORN, Springer International Publishing, Cham, 2016; *Harnessing Behavioural Science to Understand and Address Human Impacts on Environment*, in *Behavioral Science & Policy*, Vol. 7, issue 2, 2021; M. ALT, N. DELLA VALLE, H. BRUNS, *Combining Interventions to Promote Pro-Environmental Behaviours. The Role of Incentives and Norms for Effective Climate Interventions*, EU Commission, Brussels, 2023, <https://publications.jrc.ec.europa.eu/repository/handle/JRC134018>; A. BALMFORD, R.B. BRADBURY *et al.*, *Making more Effective Use of Human Behavioural Science in Conservation Interventions*, cit.; P. BUJOLD, M. PASCUAL, E. THULIN, *Expanding Beyond Nudge: Experiences Applying Behavioral Science for Comprehensive Social Change*, in *Behavioral Public Policy in a Global Context*, cit., 205 et seqq.; I. IVOI, *La cerniera. La spinta gentile al servizio della sostenibilità*, cit.; A. KOLLMUSS, J. AGYEMAN, *Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-Environmental Behavior?*, in *Environmental Education Research*, 8:3, 2002, 239 et seqq.; K. KURISU, *Pro-environmental Behaviors*, Springer, Tokyo, 2015; OECD, *Tackling Environmental Problems with the Help of Behavioural Insights*, OECD Publishing, Paris, 2017, <https://doi.org/10.1787/9789264273887-en>; BIT, *How to Build a Net Zero Society. Using Behavioural Insights to Decarbonise Home Energy, Transport, Food, and Material Consumption*, cit.; RARE AND THE BEHAVIOURAL INSIGHTS TEAM, *Behavior Change For Nature: A Behavioral Science Toolkit for Practitioners*, cit., which refers to a wide body of stimulating documentation; P. VIDALI, *La negazione ecologica*, cit.; further references will be provided below.