Advancing exposure science for integrated EU chemicals policies: a framework for efficiency

19.03.2024

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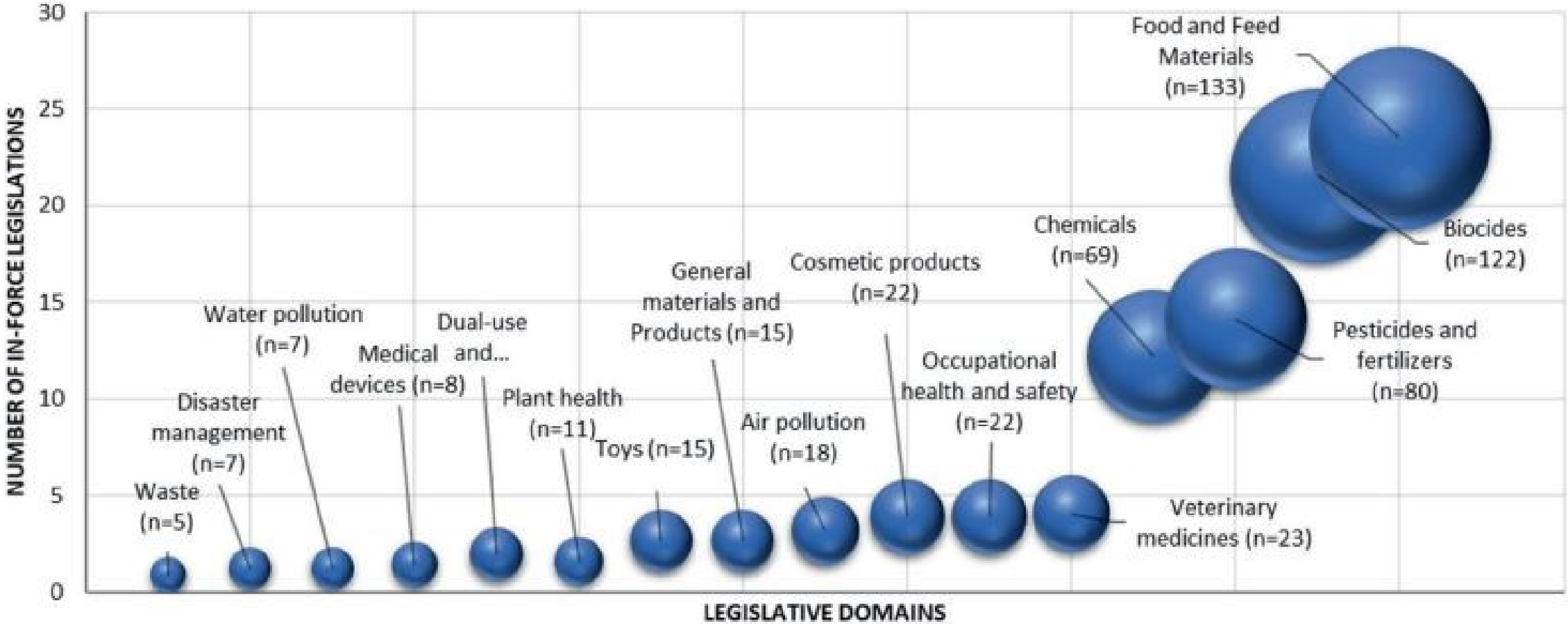
Acknowledgements

Yuri Bruinen de Bruin
Antonio Franco
Andreas Ahrens
Alick Morris
Hans Verhagen
Stylianos Kephalopoulos
Valeria Dulio
Jaroslav Slobodnik
Dick T.H.M. Sijm
Theo Vermeire

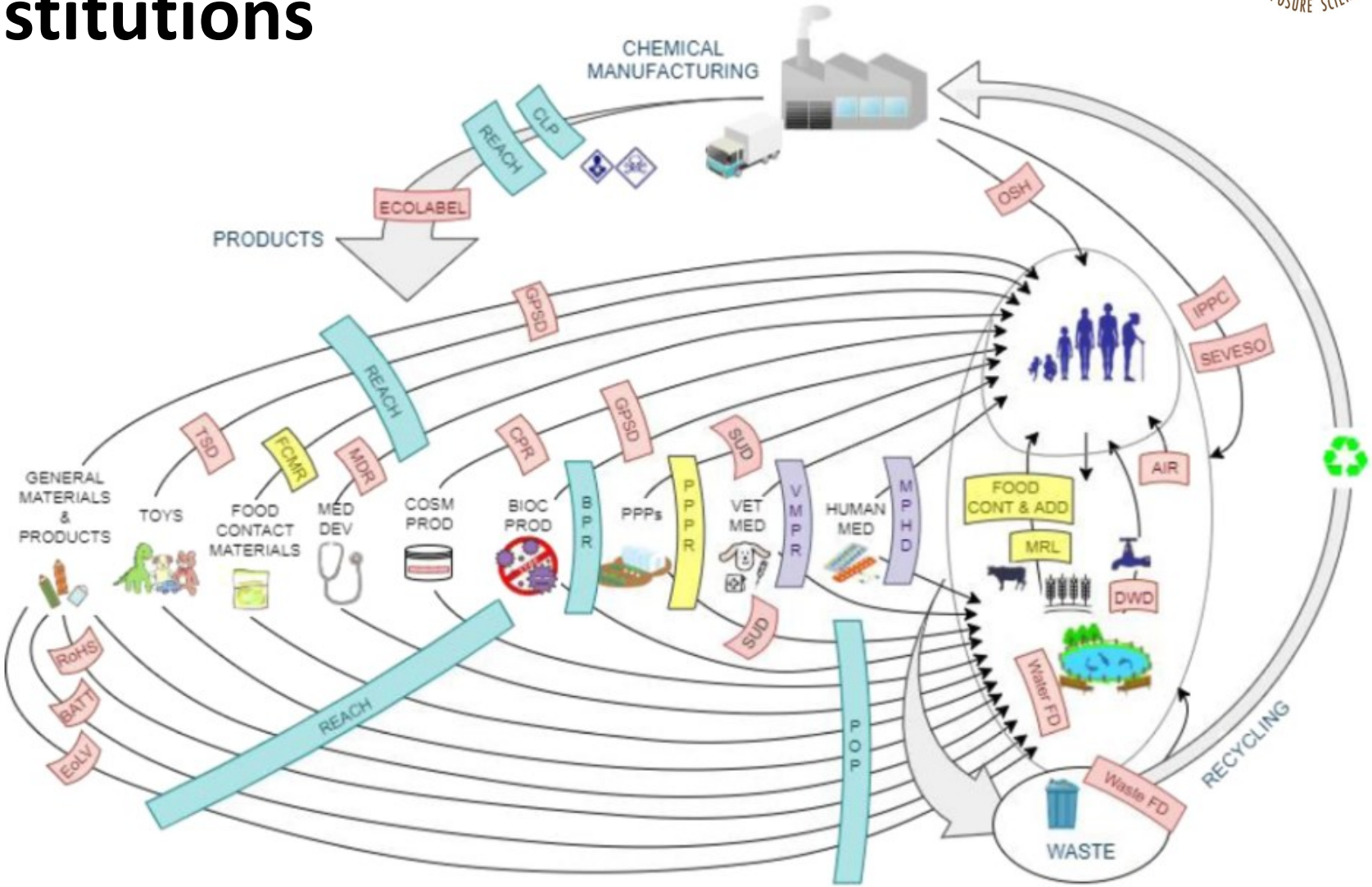
Takaaki Ito
Koki Takaki
Jonathas De Mello
Jos Bessems
Maryam Zare Jeddi
Celia Tanarro Gozalo
Kevin Pollard
Josephine McCourt
Peter Fantke

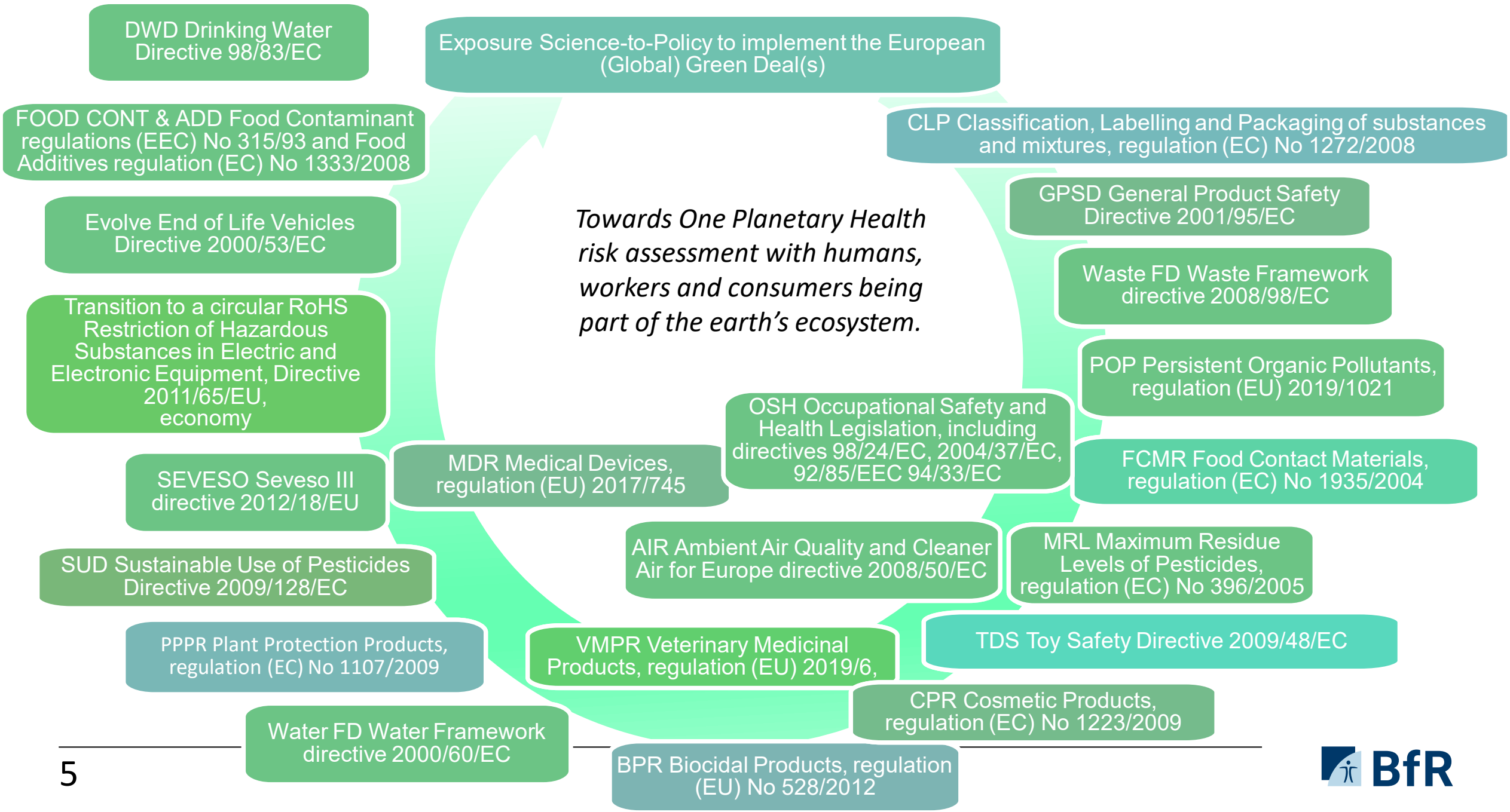
Special thanks to Bob Diederich, Urban Boije af Gennäs, Georg Streck and Stephanie Bopp.


NUMBER OF IN-FORCE LEGISLATIONS
30
25
20
15
10
5
0
LEGISLATIVE DOMAINS
Waste (n=5)
Disaster management (n=7)
Water pollution (n=7)
Medical devices (n=8)
Dual-use and...
Plant health (n=11)
Toys (n=15)
General materials and Products (n=15)
Air pollution (n=18)
Cosmetic products (n=22)
Occupational health and safety (n=22)
Veterinary medicines (n=23)
Chemicals (n=69)
Pesticides and fertilizers (n=80)
Food and Feed Materials (n=133)
Biocides (n=122)

Legislation falling under the scientific remit of different EU institutions

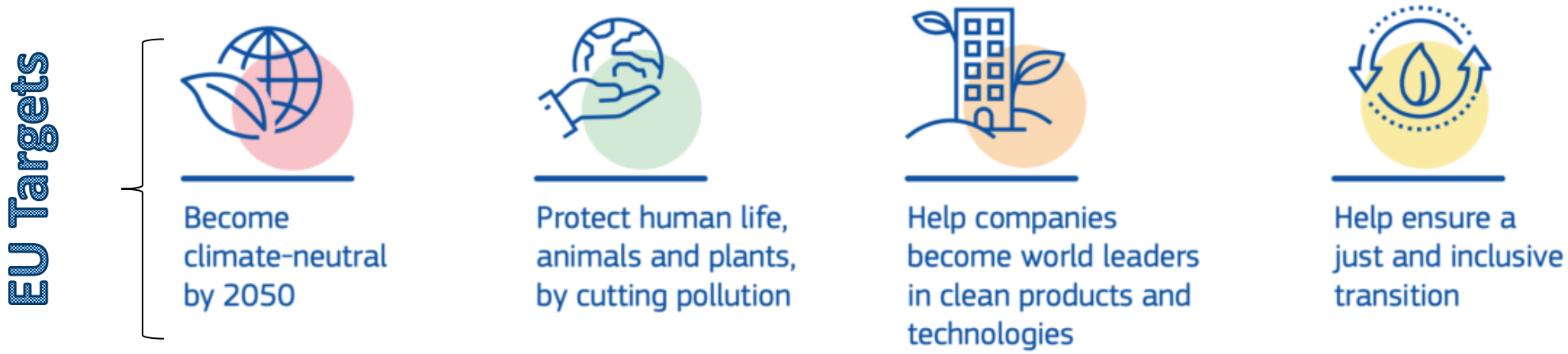
Legislation falling under the scientific remit of different EU institutions is labelled with different colours (blue: ECHA, yellow: EFSA, purple: EMA, red: EU Commission and Scientific Committees).




DWD Drinking Water Directive 98/83/EC
Exposure Science-to-Policy to implement the European (Global) Green Deal(s)
FOOD CONT & ADD Food Contaminant regulations (EEC) No 315/93 and Food Additives regulation (EC) No 1333/2008
CLP Classification, Labelling and Packaging of substances and mixtures, regulation (EC) No 1272/2008
Evolve End of Life Vehicles Directive 2000/53/EC
GPSD General Product Safety Directive 2001/95/EC
Towards One Planetary Health risk assessment with humans, workers and consumers being part of the earth's ecosystem.
Transition to a circular RoHS Restriction of Hazardous Substances in Electric and Electronic Equipment, Directive 2011/65/EU, economy
Waste FD Waste Framework directive 2008/98/EC
POP Persistent Organic Pollutants, regulation (EU) 2019/1021
OSH Occupational Safety and Health Legislation, including directives 98/24/EC, 2004/37/EC, 92/85/EEC 94/33/EC
SEVESO Seveso III directive 2012/18/EU
MDR Medical Devices, regulation (EU) 2017/745
FCMR Food Contact Materials, regulation (EC) No 1935/2004
AIR Ambient Air Quality and Cleaner Air for Europe directive 2008/50/EC
MRL Maximum Residue Levels of Pesticides, regulation (EC) No 396/2005
SUD Sustainable Use of Pesticides Directive 2009/128/EC
PPPR Plant Protection Products, regulation (EC) No 1107/2009
VMPR Veterinary Medicinal Products, regulation (EU) 2019/6,
TDS Toy Safety Directive 2009/48/EC
CPR Cosmetic Products, regulation (EC) No 1223/2009
Water FD Water Framework directive 2000/60/EC
BPR Biocidal Products, regulation (EU) No 528/2012

Seven challenges

1. Availability of exposure data, information and knowledge for use across policy domains.
2. Acceptance criteria for exposure data and methods across policies.
3. Integration of scientific exposure assessment and modelling frameworks.
4. Integration of exposure knowledge into companies' management systems.
5. Regulatory adoption of innovative monitoring approaches.
6. Consideration of combined exposure to multiple chemicals.
7. Harmonising the use of exposure science across all relevant policy domains.



Recommendations

1. *Establishing a unified scientific framework for exposure assessment across EU chemical policies* for environmental, health, safety, and sustainability assessments.

2. *Enhancing regulatory process coordination* enabling risk assessors to coordinate assessments more effectively.

3. *Integrating exposure knowledge into companies' management systems* ensuring product and process safety and sustainability.

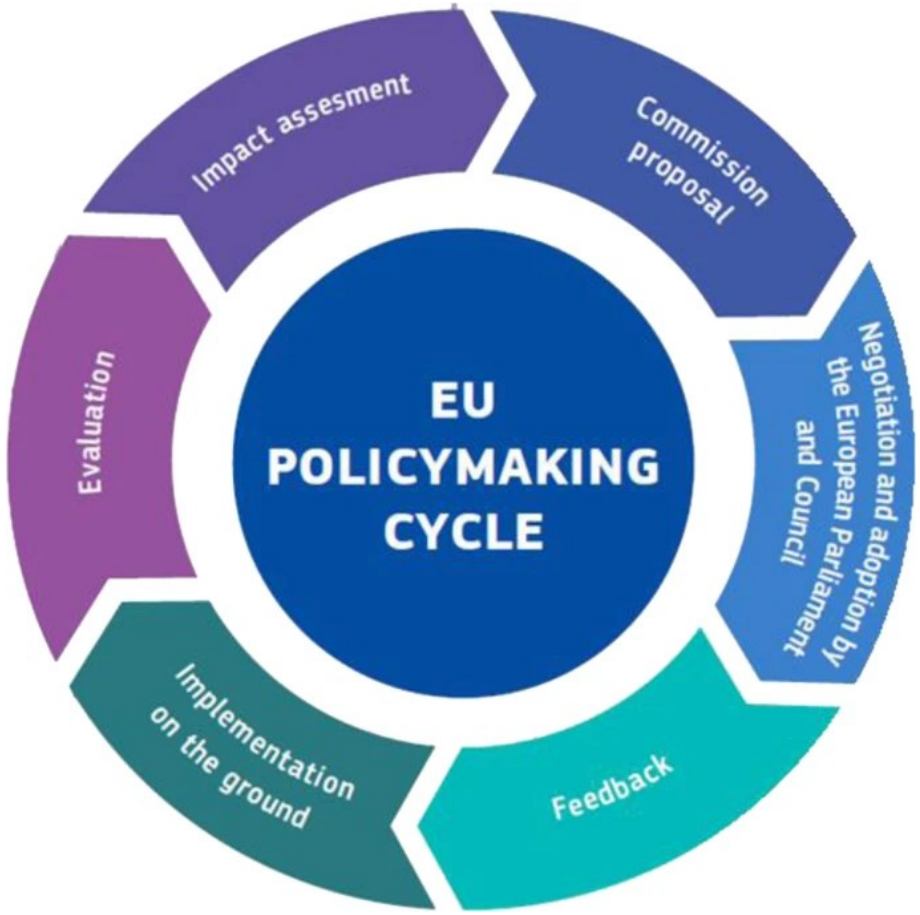
4. *Improve exposure science innovation integration into policy* through stakeholder consultations and scientific input mechanisms.

5. *EU-funded research should address knowledge gaps identified in policy evaluations*, like assessing hazardous chemical behavior in materials, including recycled materials.

6. *Harmonize and utilize exposure science across health, safety, and security policies* by enhancing access to global chemical inventories, exposure data, tools, guidance, and international knowledge.

EU Policymaking Cycle – Key Questions

1. Are there gaps or inconsistencies in exposure science usage across policies and how is the impact measured?
2. How can policy alignment be improved to better integrate exposure science?
3. How can efforts be strengthened to enhance regulatory efficiency and optimize exposure science utilization throughout the EU Policy Cycle?



4. How are exposure policy integration efforts coordinated across different government agencies and stakeholders?
5. How are policy recommendations developed based on data analysis and research findings?
6. How are policy implementation progress and outcomes monitored and reported to relevant authorities?

Reference

Bruinen de Bruin, Y., Franco, A., Ahrens, A. et al. Enhancing the use of exposure science across EU chemical policies as part of the European Exposure Science Strategy 2020–2030. J Expo Sci Environ Epidemiol 32, 513–525 (2022). https://doi.org/10.1038/s41370-021-00388-4

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