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1. Report

THE PRECAUTIONARY PRINCIPLE IN THE WORK OF THE PUBLIC ADMINISTRATION: RISK MANAGEMENT IN CLIMATE CHANGE.

Vera Fanti

ABSTRACT: This report aims to highlight the fundamental role played by the precautionary principle in the issue of the climate emergency and how this principle is increasingly used in international governance policies to counter unpredictable phenomena, that could lead to environmental disasters, in connection with the evolution of the climate. The first part of the paper is dedicated to the analysis of the main historical and political stages in which the prediction of the precautionary principle has been related to the climate issue in order to face up to the problem of global warming. Then, the paper examines how this principle is currently employed by the most important acts, in particular the so-called European Green Deal. Finally, the essay reflects on the links between precautionary and proportionality principles, which are both of a relational nature, and necessary tools in the political decision-making processes for dealing with the global climate emergency.

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1. Introduction. Precaution and climate emergency.

For a long time, environmental protection has been considered to be a matter of exclusively internal interest of the Member States, mostly regulated within the individual States with their own legal systems. It is only since the 1960s that the international community has become aware that environmental protection requires a global approach. Since all States contribute, in different ways, to the environmental deterioration, it is necessary for everyone to act for the protection of the environment, which is understood as a common heritage of humanity. So, only recently, the international community has begun to cooperate on environmental protection, including the issue of climate change, and all states have realised that only synergistic action can minimise costs and maximise results.

This has created a common regulatory framework, the so-called international environmental law¹, the sources of which are customary and conventional standards, general principles, and other acts of non-binding effect (the so-called soft law acts: for example, Declarations of Principles, Action Plans, etc.).

Among the general principles of environmental law at international level (principles which are found in the Treaties or which are the result of elaborations at the level of case-law), we find the precautionary principle². It has its historical origin

1 See, R. FERRARA, *I principi comunitari della tutela dell'ambiente*, in *Dir. amm.*, 2005, 3, 509-555, especially 525-544; P. DELL'ANNO, *Principi del diritto ambientale europeo e nazionale*, Giuffrè, Milan, Italy, 2004, *passim*; G. CORDINI, *Diritto ambientale comparato*, III, Cedam, Padua, Italy, 2002, *passim*.

2 V. FANTI, *Dimensioni della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, Giappichelli, Turin, Italy, 2012, 179-187; F. DE LEONARDIS, *Il principio di precauzione nell'amministrazione di rischio*, Giuffrè, Milan, Italy, 2005, *passim*; M. SIMONCINI, *La regolazione del rischio e il sistema degli standard. Elementi per una teoria dell'azione amministrativa attraverso i casi di terrorismo e dell'ambiente*, Editoriale Scientifica, Naples, Italy, 2010, *passim*; F. TRIMARCHI, *Principio di precauzione e "qualità" dell'azione amministrativa*, in *Riv. it. dir. pubbl. comunit.*, 2005, 6, 1673-1707; M. ANTONIOLI, *Precauzionalità, gestione del rischio e azione amministrativa*, in *Riv. it.*

and its political affirmation in the Federal Republic of Germany in the 1970s, as a result of the discovery of extensive continental environmental damage, such as the pollution of the North Sea and deforestation by acid rain.

This principle, in the German term *Vorsorge* (that means caring and taking care of something in advance) also included semantically the principle of prevention³. Only in the law of the European Union (in particular, art. 191, paragraph 2, of the Treaty of Functioning of the European Union) the two concepts - prevention and precaution - are distinguished. In this perspective, it is specified that the principle of prevention acts in situations where the feared damages are certain and the effects of a given activity are known. Conversely, the precautionary principle operates in areas where damage is only potential or where scientific evidence of damage is lacking⁴.

Thus, the precautionary principle establishes an obligation for Member States⁵ to prevent serious and irreversible environmental damage, regardless of scientific certainty as to its cause, or by prohibiting actions that, according to an existing scientific assessment, could lead to serious harm to the environment.

The ideal area for environmental risk⁶ assessment is urban planning in the defence against natural disasters and the promotion of climate resilience⁷. In relation to climate change, land management is concerned with the analysis of risk categories represented by landslides, drought, soil erosion, fires, flooding, etc., all phenomena that could pose a hydrogeological risk. Hence, the precautionary principle is used in international government policies, to prevent these natural events from degenerating into environmental disasters with regard to the evolution of the climate.

dir. pubbl. comunit., 2007, 1, 51-76; I.M. MARINO, *Aspetti propedeutici del principio giuridico di precauzione*, in *Studi in onore di Alberto Romano*, Editoriale Scientifica, Naples, Italy, 1511-1544; P. DELL'ANNO, *Diritto dell'ambiente. Commento sistematico al d. lgs. 152/2006 integrato dal d. lgs. 4/2008, 128/2010, 205/2010, 121/2011*, Cedam, Padua, Italy, 2016, *passim*.

3 E. BUOSO, *I principi di prevenzione e di precauzione nel diritto ambientale tedesco*, in S. BUDELLI (edited by), *Società del rischio. Governo dell'emergenza*, vol. I, Ambientediritto Editore, Tortorici, Italy, 2020, 163 et seq.; A. GRAGNANI, *Il principio di precauzione come modello di tutela dell'ambiente, dell'uomo, delle generazioni future*, in *Riv. dir. civ.* 2003, 1, 16-24.

4 F. DE LEONARDIS, *Principio di prevenzione e novità normative in materia di rifiuti*, in *Studi in onore di Alberto Romano*, Editoriale Scientifica, Naples, Italy, 2011, *passim*; L. GIANI, *Il ruolo del principio di prevenzione e di precauzione nelle politiche pubbliche ambientali nel diverso contesto del "diritto del rischio"*, in S. BUDELLI (edited by), *Società del rischio. Governo dell'emergenza*, 141 et seq.

5 See, R. CARANTA, *The Precautionary Principle in Italian Law*, in M. PAQUES (edited by), *Le principe de précaution en droit administratif. Rapport International et rapports nationaux*, Bruylant, Brussels, 2007, 199.

6 See, A. BARONE, *Il diritto del rischio*, II, Giuffrè, Milan, Italy, 2006, *passim*.

7 R. FERRARA, *Precauzione e prevenzione nella pianificazione del territorio: la "precauzione inutile"?*, in *Riv. giur. ed.*, 2012, 2, 61-77.

Before verifying the scope of this principle, let us consider, in summary, the historical progression of the precautionary principle, seen in connection with the issue of climate emergency, source of considerable damage to the environment or the occurrence of those “unusual circumstances” in the context of risk awareness⁸.

2. Precaution and climate: brief historical explanation of the main international political decisions.

Below I will outline the main historical and political stages in which the prediction of the precautionary principle has been related to the climate issue in order to face up to the problem of global warming⁹.

1979: World Meteorological Conference (WMO): climate change became the subject of international scrutiny and discussion.

28 October 1982: World Nature Charter adopted by the United Nations General Assembly. One of the first references to the precautionary principle at international level is contained in article 11, letter b): «activities involving a high degree of risk to nature must be preceded by an in-depth examination and their promoters must demonstrate that the benefits of the activity outweigh any damage to nature. And where the harmful effects of such activities are imperfectly known, they should not be undertaken».

1988: IPCC, The International Panel on Climate Change, was established. It is a body whose main purpose is to investigate and make public discoveries on climate change and possible international actions. The IPCC has only formulated hypotheses about the possible effects of human activity on the climate. On the basis of what was pointed out by that body, which applied the precautionary principle, the Framework Convention was adopted in 1992.

1992: at the Rio Conference (*UN Conference on Environment and Development, UNCED, c.d. Earth Summit*), the **United Nations Framework Convention on Climate Change, (UNFCCC)** was adopted, which was the first and main international treaty

8 N. LUHMANN, *Sociologia del rischio*, Bruno Mondadori, Milan, Italy, 1996, *passim*.

9 About the development of the precautionary principle see, F. SPAGNOLI, *Il principio di precauzione nel diritto internazionale ed europeo: il ruolo della scienza e del diritto nell'emergenza climatica*, in *DPCE Online*, vol. 44, 2020, 3, 3497-3500; F. DE LEONARDIS, *L'evoluzione del principio di precauzione tra diritto positivo e giurisprudenza*, in F. MERUSI and V. GIOMI (edited by), *Principio di precauzione e impianti petroliferi costieri*, Giappichelli, Turin, Italy, 2011, 3-13; R. TITOMANLIO, *Il principio di precauzione fra ordinamento europeo e ordinamento italiano*, Giappichelli, Turin, Italy, 2018, *passim*.

through which it was decided to focus on reducing greenhouse gas emissions¹⁰. Principle n. 15 establishes: «the Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties». As is clear in the text, the precautionary principle is explicitly referred to only as protection of the environment. However, over time, the scope of this principle has increased widely, also affecting the policy of consumer protection, human, animal and plant health.

1997 (entered into force in 2005): the **Kyoto Protocol**. It was the first international document to impose emission reduction obligations on countries party to the agreement¹¹. Specifically, the Kyoto Protocol called for a 5% reduction in greenhouse gas emissions, compared with 1990 levels and to be achieved by 2012. The ratification of the Protocol by the countries has been very slow. The Kyoto Protocol obtained the necessary signatures to enter into force only in 2005.

1998: Wingspread Conference on the implementation of the precautionary principle: the Wingspread Consensus Statement on the precautionary principle states: «therefore it is necessary to implement the Precautionary Principle: where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically».

2000: Cartagena Protocol on Biodiversity: this document provides for the progressive international recognition of the “risk assessment” phase as an essential element in the application of the precautionary principle¹².

¹⁰ See, T. TREVES, *Il diritto all'ambiente a Rio e dopo Rio*, in *Riv. giur. ambiente*, 1993, 3-4, 577-583; M. TALLACCHINI, *Earth Summit '92*, in *Riv. int. dir. uomo*, 1992, 2, 527-544; S. MARCHISIO, *Gli atti di Rio nel diritto internazionale*, in *Riv. dir. inter*, 1992, 3, 581-621.

¹¹ See, P. GALIZZI, *La terza Conferenza delle Parti della Convenzione sul cambiamento climatico (Kyoto - 1/10 dicembre 1997)*, in *Riv. giur. ambiente*, 1998, 3-4, 561-568.

¹² See, S. NESPOR, *La Conferenza di Copenhagen: un accordo fallimentare o la base di un nuovo ordine internazionale per il contenimento del cambiamento climatico?*, in *Riv. trim. dir. pubbl.*, 2010, 2, 467-475.

2009: Copenhagen Accord: For the first time there is talk of trying to keep the increase in the world average temperature below 2 degrees Celsius. The commitments made by the countries on this occasion are not binding.

2011: Cancùn Climate Conference: a special body was set up, the Cancùn Adaptation Committee, which is responsible, among other things, for formulating a programme of study and intervention on the damage and losses that will be suffered by countries particularly exposed to climate change. This is the subject of loss and damages that are the subject of specific treatment in the Paris Agreement.

December 2011: Durban Platform (an agreed outcome) marked the definitive overtaking of the Kyoto Protocol and, above all, of the interpretation of the CBDR formulated in the Berlin Mandate. It provides that all the States of the international community will proceed together in the negotiation of a Global Agreement, which, if not binding, must in any case have legal effect in 2020.

September 2015: 2030 Agenda for Sustainable Development was an action programme for people, the planet and prosperity, signed in September 2015 by the governments of the 193 member countries of the United Nations. It incorporates 17 Sustainable Development Goals. In particular, the Objective 13 provides for the “fight against climate change”.

13 December 2015: Paris Climate Agreement. The XXI Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change¹³ took place held in Paris from 30 November to 12 December 2015 and produced the first universal text to limit the increase in global warming to less than 2 degrees Celsius from 2015 to 2100 (2,900 billion tonnes of CO₂, which translates into a cut of between 40 and 70% of emissions by 2050). The objectives must be reviewed within the framework of national commitments every 5 years, with the aim of making them increasingly ambitious. The Paris Agreement came into force in 2016, following ratification by at least 55 countries that together account for at least 55% of global greenhouse gas emissions. On October 5, the European Union formally ratified the agreement, allowing it to enter into force on 4 November 2016 and pledging to reduce greenhouse gas emissions by at least 40% by 2030 (base year 1990).

2017: Towards a Global Compact for the Environment. It was a pact that was presented by French President Macron at a launch summit on 19 September 2017 in New York at the UN General Assembly. The Pact is part of the 2030 Sustainable Development Action Programme.

¹³ See, S. NESPOR, *La lunga marcia per un accordo globale sul clima: dal protocollo di Kyoto all'accordo di Parigi*, in *Riv. trim. dir. pubbl.*, 2016, 1, 81-121; M. MONTINI, *Riflessioni critiche sull'accordo di Parigi sui cambiamenti climatici*, in *Riv. dir. intern.*, 2017, 3, 719-754.

2018: Global Pact for the Environment: Article 6 – Precaution: «Where there is a risk of serious or irreversible damage, lack of scientific certainty shall not be used as a reason for postponing the adoption of effective and proportionate measures to prevent environmental degradation».

3. European Green Deal.

Within the European Union's climate-environmental policy, an ambitious investment plan is represented by the **European Green Deal**, promoted by the European Commission on 11 December 2019 and approved by the European Parliament on 15 January 2020¹⁴.

The European Union is committed to achieve climate neutrality by 2050. The European Commission's communication on the European Green Deal sets out strategic initiatives to help the EU achieve its climate neutrality target by 2050. The European Green Deal provides for an action plan to promote the efficient use of resources by moving to a clean and circular economy and to restore biodiversity and reduce pollution¹⁵. Activities carried out under the Green Deal include:

- European Climate Pact (9 December 2020)¹⁶;
- 2030 Climate Targets Plan (presented on September 17, 2020);
- Proposal for a European climate law to ensure a climate-neutral European Union by 2050 (4 March 2020).

The Commission's text makes no explicit mention of the precautionary principle, referring in general terms to the need to direct the Union's actions and policies towards limiting emissions and the transition to sustainable development¹⁷. On the other hand, the European Parliament has stressed the fundamental role of the precautionary principle as a guide to the European Union's actions in all policies,

¹⁴ European Commission, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, «*The European Green Deal*», Brussels, 11.12.2019, COM (2019) 640 final.

¹⁵ See, S. MORATTI, *Green deal europeo: nuove prospettive per la fiscalità dell'energia nelle politiche di gestione dei rischi climatici*, in *Riv. dir. fin.*, 2020, 4, 439-463.

¹⁶ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, «*European Climate Pact*», Brussels, 9.12.2020, COM (2020) 788 final.

¹⁷ F. SPAGNOLI, *Il principio di precauzione nel diritto internazionale ed europeo*, 3500.

linked to the principle of “do no harm”, to safeguard health and the environment¹⁸. This principle is valued within a coherent and integrated environmental policy vision, together with all the other principles set out in the Treaty on the Functioning of the European Union (prevention, correction, “polluter pays”).

In the near future, in November 2021, the 26th **United Nations World Climate Conference (COP 26)** will be held in **Glasgow** from 1 to 12 November 2021. The USA will take a leading role; in fact, after Trump had initiated the US exit procedure from the Paris Agreement in November 2019, in January 2021 the US President Biden signed the return order.

Recent policy measures taken by the European Union on climate change include:

- Circular economy (May 2019): the ban on single-use plastic products;
- April 2019: stricter emission limits for cars and vans to ensure that, from 2030, cars and vans generate CO₂ emissions at 37.5% lower and 31% lower than 2021 levels respectively. Between 2025 and 2029, cars and vans will have to generate, on average, CO₂ emissions, which are 15% lower.

4. Precaution and proportionality. A conclusion.

In all indicated measures, although almost never directly recalled, the general scope of the precautionary principle is evident. In the presence of interventions that has a potentially prejudicial effect to the environment in the face of climate change, Community institutions must take appropriate measures to prevent the risks, as far as possible¹⁹. In doing so, however, all relevant interests in that case must be carefully

¹⁸ European Parliament, *European Parliament resolution of 15 January 2020 on the European Green Deal (2019/2956(RSP))*, Strasbourg, 15 January 2020, especially, section ‘Do no harm’ - mainstreaming sustainability in all EU policies, paragraph 101.

¹⁹ See, F. DE LEONARDIS, *Il principio di precauzione nell’amministrazione di rischio*, 322; ID, *Tra precauzione e ragionevolezza*, in *Federalismi.it*, 2016, 2; ID, *Il principio di precauzione*, in M. RENNA and F. SAITTA (edited by), *Studi sui principi del diritto amministrativo*, Giuffrè, Milan, Italy, 2012, 419-424.

balanced, in order to avoid a disproportionate²⁰ and, therefore, unreasonable²¹ choice. The potential danger²² is thus taken into account, since it is by no means certain that the damage which has been avoided by means of the precautionary principle will actually occur, but this does not prevent all the necessary and proportionate precautions from being taken²³.

In other words, precautionary measures must be risk-related, provisional, and rapid, and must also be based on an appropriate weighting of the cost-benefit ratio²⁴. It is precisely from these characteristics that the relational character of the precautionary principle emerges in a complete way, which is based on the comparison between the risk - which, by its own nature, may be possible or even probable - and the implementation of instruments to contain it²⁵. In this area there is no certainty, but only risk forecasts and, however, even the mere hypothesis of danger justifies the carrying out of a report and, therefore, the adoption of

20 About the proportionality principle see, V. FANTI, *Dimensioni della proporzionalità, passim*; A. SANDULLI, *La proporzionalità dell'azione amministrativa*, Cedam, Padua, Italy, 1998, *passim*; ID., (item) *Proporzionalità*, in S. CASSESE (edited by), *Dizionario di diritto pubblico*, vol. V., Giuffrè, Milan, Italy, 2006, *passim*; D.U. GALETTA, *Principio di proporzionalità e sindacato giurisdizionale nel diritto amministrativo*, Giuffrè, Milan, Italy, 1998, *passim*; ID., *Il principio di proporzionalità*, in M. RENNA and F. SAITTA (edited by), *Studi sui principi di diritto amministrativo*, Giuffrè, Milan, Italy, 2012, *passim*; G. SCACCIA, *Il principio di proporzionalità*, in S. MANGIAMELI (edited by), *Ordinamento Europeo. L'esercizio delle competenze*, vol. II, Giuffrè, Milan, Italy, 2006, 228; A. SAU, *La proporzionalità nei sistemi amministrativi complessi. Il caso del governo del territorio*, FrancoAngeli editore, Milan, Italy, 2013, *passim*; F. NICOTRA, *I principi di proporzionalità e ragionevolezza dell'azione amministrativa*, in *Federalismi.it*, 2017, 12; G. DE BÜRCA, *The principle of proportionality and its application in EC law*, in *Yearbook of European law*, 1993, 13, 105-150; E. ELLIS, *The principle of proportionality in the European Law*, Hart Publishing, Oxford, England, 1999, *passim*; S. COGNETTI, *Principio di proporzionalità*, Giappichelli, Turin, Italy, 2011, *passim*.

21 About the reasonableness principle see, F. MERUSI, *Ragionevolezza e discrezionalità amministrativa*, Editoriale Scientifica, Naples, Italy, 2011, *passim*; V. FANTI, *Dimensioni della proporzionalità*, 116-124; P.M. VIPIANA, *Introduzione allo studio del principio di ragionevolezza nel diritto pubblico*, Cedam, Padua, Italy, 1993, *passim*; G. LOMBARDO, *Il principio di ragionevolezza della giurisprudenza amministrativa*, in *Riv. trim. dir. pubbl.*, 1997, 4, 939-986; A. SPADARO, *I diritti della ragionevolezza e la ragionevolezza dei diritti*, in *Ars Interpretandi*, 2002, 7, 325-345; L. D'ANDREA, *Ragionevolezza e legittimazione del sistema*, Giuffrè, Milan, Italy, 2005, *passim*; S. COGNETTI, *Clausole generali nel diritto amministrativo. Principi di ragionevolezza e di proporzionalità*, in *Giur. it.*, 2012, 5, 1197-1213; F. ASTONE, *Principio di ragionevolezza nelle decisioni giurisdizionali e giudice amministrativo*, in *Federalismi.it*, 2018, 17.

22 A. GRAGNANI, *Il principio di precauzione come modello di tutela dell'ambiente*, 24.

23 See, R. FERRARA, *Etica, ambiente e diritto: il punto di vista del giurista*, in R. FERRARA and C.E. GALLO (edited by), *Trattato di diritto dell'ambiente - Le politiche ambientali, lo sviluppo sostenibile e il danno*, I, Giuffrè, Milan, Italy, 2014, 28.

24 R. FERRARA, *Modelli e tecniche della tutela dell'ambiente: il valore dei principi e la forza della prassi*, in *Foro amm. T.A.R.*, 2009, 6, 1947.

25 V. FANTI, *Dimensioni della proporzionalità*, 179-187, especially 181-182.

proportionally appropriate instruments: in other words, future actions are prepared that are not only adequate, but also proportionate to the risk, even if they are potential.

However, it has been pointed out that, with regard to climate policies, both at international level (with the United Nations Framework Convention on European Change and the IPCC), and at European level (with the Paris Agreement and the European Green Deal), the precautionary principle constitutes a general principle for the direction of public authorities, even if it did not have a practical application. It is therefore necessary that, on the basis of the relational character, this principle should in practice be applied, re-establishing the objective of reducing emissions that are harmful to the environment with the protection of mainly economic interests, according to discretionary assessments by the public authorities²⁶.

Within the Horizon Europe support programme (35% of which is allocated to climate research) instruments have been provided to implement certain objectives. For example, Section II of the Green Deal: - "From producer to consumer": designing a fair, healthy and environmentally friendly food system; - "Real pollution" for an environment free of toxic substances; - "Stimulating research and innovation", etc.

Well, in order to prepare the means to achieve these objectives, it is necessary to involve various stakeholders with experimental approaches, as well as to prepare an action to raise public awareness of schools, training institutes and universities.

In fact, it is only through the meeting of science (that has the skills to carry out a scientific risk assessment) with politics (administration that is the receptor of the risk assessment carried out by the technical body) that it will be possible to put in place concrete measures to combat excessive global warming, which is a source of considerable damage to the environment²⁷. Law enforcement measures, through

26 A. BARONE and G.A. ANSALDI, *The european "nomofilachia" and the principle of proportionality*, in *Transylvanian review of administrative sciences*, 2009, 210-235. On the relationship between precautionary principle and discretion (technical), see S. COGNETTI, *Potere amministrativo e principio di precauzione fra discrezionalità tecnica e discrezionalità pura*, in S. COGNETTI, A. CONTIERI, S. LICCIARDELLO, F. MANGANARO, S. PERONGINI and F. SAITTA (edited by), *Percorsi di diritto amministrativo*, Torino, 2014, 142 et seq.

27 See, F. SPAGNOLI, *Il principio di precauzione nel diritto internazionale ed europeo*, 3500-3503; R. FERRARA, *Etica, ambiente e diritto: il punto di vista del giurista*, 26; M. TALLACCHINI, *Ambiente e diritto della scienza incerta*, in S. GRASSI, M. CECCHETTI and A. ANDRONIO (edited by), *Diritto e ambiente*, Olschki, Florence, Italy, 1999, 59-100; S. GRASSI, *Prime osservazioni sul "principio di precauzione" come norma di diritto positivo*, in *Dir. gest. ambiente*, 2001, 38-67; M. CECCHETTI, *Principio di precauzione e produzione pubblica del diritto*, in G. GUERRA, A. MAURANTONIO, E. PARIOTTI, M. PICCINI, and D. RUGGIU (edited by), *Forme di responsabilità, regolazione e nanotecnologie*, Il Mulino, Bologna, Italy, 2011, 121-158; M. CECCHETTI, *La produzione pubblica del diritto dell'ambiente: tra expertise tecnico-scientifico, democrazia e responsabilità politica*, in

politics, will have to be accepted by the public on which radical changes in living standards cannot be imposed without democratic participation in that decision.

In conclusion, becomes fundamental to rethink the dialogue between technology, science, law (i.e. the subjects involved in evaluation) and political administration which takes the planning decision. So, all legal systems should provide for a fruitful exchange of knowledge and perspectives between scientists and politicians, in order to cooperate in the better application of the precautionary principle. The use of this principle, in fact, should take place in a more “courageous” way²⁸, introducing common models of decision-making and action that, while involving potential economic and social trade-offs, can ensure the balance, in a proportionate way, between land development, promotion and guarantee of economic activities and protection of the environment²⁹.

DPCE online, 2020, 3, 3399-3416; L. GIANI, *Il ruolo del principio di prevenzione e di precauzione nelle politiche pubbliche ambientali nel diverso contesto del “diritto del rischio”*, 151.

28 F. SPAGNOLI, *Il principio di precauzione nel diritto internazionale ed europeo*, 3502.

29 L. GIANI, *Il ruolo del principio di prevenzione e di precauzione nelle politiche pubbliche ambientali nel diverso contesto del “diritto del rischio”*, 153 et seq., speaks about a correct consideration of the risk and the institutionalization of his correct assessment, with a view to sustainability and responsibility: overlapping the scope of the precautionary principle, the balance could operate not only by including short-term costs, but also potential risk-related social costs, the so-called “interests” of future generations. Therefore, the development must be compatible with the protection of the environment, in a dimension that guarantees a full satisfaction of the community interests.

2. Report

ENVIRONMENTAL SIMPLIFICATION IN DIGITAL TRANSITION.

Maddalena Ippolito

ABSTRACT: The aim of the paper is to highlight, in the wake of the multiple European and national initiatives, the need for administrative simplification in environmental matters in order to pursue greater speed of proceedings relating to activities with environmental impacts and a "new" simplification of administrative authorizations. In this context the author proposes to underline the potential of Blockchain technology in order to reconfigure environmental protection according to a multipolar logic, preventing and reducing cases corruption or maladministration.

TABLE OF CONTENTS: **1.** Introduction – **2.** Systematic framework and historical-evolutionary notes of environmental policies in the digital transition – **3.** The "distributed" EIA procedure and the digital simplification of the *Autorizzazione Integrata Ambientale (AIA)* – **4.** Some concluding remarks.

1. Introduction.

One of the main factors that hinder and slow down the full and correct application of an European and national environmental legislation is the complexity of the administrative system; so the need arises to proceed, in a common strategy that leads to a sustainable economic model, to administrative simplification in environmental matters.

This choice is part of a digital transition path aimed, first of all, at pursuing a greater speed of procedures relating to activities with environmental impacts and a "new" simplification of administrative authorizations and, secondly (in a more ambitious perspective), towards algorithmic applications in the context of an environmental monitoring system based on distributed ledger technologies capable of identifying any anomalies or violations. In this sense, the connection to the solutions adopted overseas is

undoubtedly decisive, where the delicate issue relating to the protection of personal data or industrial interests does not seem to affect the prospect about the inclusion of artificial intelligence in environmental matters, that would be able to bring positive effects in terms of neutrality, efficiency and transparency of the administrative activity.

These forms of integration of environmental legislation are well reconciled with the attention paid more recently to environmental protection and to the green economy, intended as simplification actions instrumental to the growth of our country's competitiveness, and with the aim of overcoming the administrative risk of organizational deficiencies and dysfunctions.

It is, in this context, that the use of emerging technologies - among which we include Blockchain - aims to reconcile the multiple public-private needs in order to promote collaboration/interaction, falling within the framework of principle of horizontal subsidiarity pursuant to art. 118 (4) of the Constitution³⁰, to the environmental decision-making process by contributing to the prevention and reduction of pollution.

With a view to a digital (r)evolution, even in delicate sectors such as environmental protection, this new paradigm in relations between citizens and public administration, concerning the sharing of data and information through the creation of a network, could act as an incentive to create the conditions for a more effective collaboration of citizens with the responsible authorities for environmental protection plans.

Having said all this, the regulatory process followed in an European and national level about the centrality of environmental protection and the future prospect of a digital simplification³¹ of administrative procedures in environmental matters, it deserves to be carefully examined, with simultaneous expansion of the forms of control on the pursuit of institutional functions and on the effective use of public resources, which can be experienced through the distribution of environmental data and information among the various states.

2. Systematic framework and historical-evolutionary notes of environmental policies in the digital transition.

One of the factors that contributed to the growth of administrative reforms is, without doubt, internationalization which requires, on the one hand, to adjust national systems to those of other countries and, on the other hand, to coordinate with each other. Each

³⁰ On the principle of horizontal subsidiarity, intended as a vehicle for the transformation of the "methods of democracy", see the approach of Council of State, Section consultative for regulatory acts, 25 August 2003, in *Giur. it.*, 2004, 716 ss., on which see, for further details, G. RAZZANO, *Il Consiglio di Stato, il principio di sussidiarietà e le imprese*. For a further study on the principle of horizontal subsidiarity, see, *ex plurimis*, E. FOLLIERI, *Le funzioni amministrative nel nuovo Titolo V della parte seconda della Costituzione*, in *Le Regioni*, 2-3, 2003, 444 ss.; G.U. RESCIGNO, *Principio di sussidiarietà orizzontale e diritti sociali*, in *Dir. pubbl.*, 2002, 19 ss.; S. CASSESE, *L'aquila e le mosche. Principio di sussidiarietà e diritti amministrativi nell'area europea*, in *Foro it.*, V, 373 ss.; V. CERULLI IRELLI, *Sussidiarietà (dir. amm.)*, in *Enc. giur.*, Agg. XII, 2004.

³¹ For acute reflections on the digital simplification, see A.G. OROFINO, *La semplificazione digitale*, in *Il diritto dell'economia*, 3, 2019, 87-112.

national administration must adapt to the developments of the other administrations, under penalty of disadvantageous conditions for its users³².

It is, undoubtedly, merit of EU environmental policies to underline, starting from the 1970's, the importance of issues relating to environmental protection by introducing the theme of the rational use of natural resources to ensure their use by future generations³³. With the Declaration of the United Nations Conference on the Human Environment were codified, for a first time, a series of principles underlying the so-called Sustainable Development, from which emerges a highly precautionary approach as a strategy to preserve the earth's resources³⁴.

In this context, the Maastricht Treaty, given the interest in promoting the economic and social progress of peoples, elevates the protection of the environment to an expressed principle of the European Community and, therefore, to a sector of Community policies³⁵: the art. 2 of the Maastricht Treaty provides that «the Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing the common policies or activities [...] to promote throughout the Community a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment». The need to protect the environment is combined by the objectives and values of environmental action that are based to the art. 191 (2) TFEU, «on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay». A formulation that echoes the need to make up for the constant depletion of natural resources, amplified by the serious problems of compatibility of today's development model with the fate of the planet³⁶. These issues involve all the principles on which the new action plan for the circular economy is based today³⁷.

32 See the approach of S. CASSESE, *La semplificazione amministrativa e l'orologio di Taylor*, in *Riv. trim. dir. pubbl.*, 1998, 84

33 See, on the matter, F. DE LEONARDIS, *Tutela delle generazioni future e soggetti preposti alla tutela*, in *Diritti interni, diritto comunitario e principi sovranazionali*, edited by V. Parisio, Giuffrè, Milan, Italy, 2009 85 ss.

34 See, on this topic, *Declaration on the Responsibilities of the Present Generations towards future generations*, in www.ohchr.org, adopted by Unesco on 12 November 1997, in which was promoted a general principle of intergenerational solidarity.

35 In legal literature see M.P. CHITI, *L'ambiente nel Trattato di Maastricht*, in *Ambiente e sviluppo*, 6, 1995, 33 ss.

36 See the important paper by F. BENVENUTI, *Studi dedicati ai problemi dell'ambiente*, in *Arch. giur.*, 1982, 3-6, 255.

37 See *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the committee of the regions. A new Circular Economy Action Plan. For a cleaner and more competitive Europe*, COM (2020)98 final, in www.eur-lex.europa.eu, Brussels, 11 March 2020, according to which «the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade. [...] This progressive, yet irreversible transition to a sustainable economic system is an indispensable part of the new EU industrial strategy [...] Building on the single market and the potential of digital technologies, the circular economy can strengthen the EU's industrial base and foster business creation and entrepreneurship among SMEs. Innovative models based on a closer relationship with customers, mass customisation, the sharing and collaborative economy, and powered by digital technologies,

In full harmony with the euro-unit trend, the peculiarities of the changed relationship between citizen and administration, in terms of procedural participation (and simplification), emerge with particular evidence in environmental administrative law, as well as, more recently, the numerous provisions relating to the digital transition and the implementation of artificial intelligence and algorithms.

In a perspective of opening up administrative activities, in environmental matters, to the participatory influences of private individuals, at the end of the 1990's, the Aarhus Convention, drawing inspiration from Principle 10 of the Rio Declaration, highlights the importance of participation that is extrinsic in public access to decision-making processes and justice in environmental matters³⁸. An approach that is part of EU policies (the Single European Act, first, and the Maastricht Treaty, then), aimed at recognizing the principle of subsidiarity as a general principle in environmental protection. In the same sense, the European Communication on the precautionary principle (COM/2000/0001)³⁹, at Point 5 (3) of the Preamble, provides that the «the decision-making procedure should be transparent and should involve as early as possible and to the extent reasonably possible all interested parties». How not to see, in these provisions, the tangible sign of the need to provide guarantees of transparency and verification in the management of complex situations such as, among others, environmental protection.

Transparency of the processes assumes the double declination of a barrier to maladministration and a tool for the total accessibility of information concerning the organization and activity of public administration: this is in order to favour widespread forms of control in the pursuit of institutional functions and in the use of public resources⁴⁰.

Moreover, within the community institutions, in the last five years, the unstoppable potential of Artificial Intelligence (AI) has emerged for practical applications that improve the work of public administrations, combining large volumes of data and information from different sources and guaranteeing their correctness and accuracy.

For this purpose, the European Union (EU) is committed to “building trust with disintermediation”, marking an important European involvement in the process of modernization of public administrations thanks to greater transparency and greater effectiveness at the procedural level, which can be pursued with use of automation.

In this direction, the EU has observed the applicability of Blockchain technology as an important guide in the administrative simplification process: in fact, the Resolution of the European Parliament of 3 October 2018 on distributed ledger and Blockchain technologies

such as the internet of things, big data, blockchain and artificial intelligence, will not only accelerate circularity but also the dematerialisation of our economy and make Europe less dependent on primary materials».

38 *Convention on access to information, public participation in decision-making and access to justice in environmental matters* (Aarhus Convention), Decision 2005/370/EC, in www.eur-lex.europa.eu. See, on the concept of public participation emerging from the Aarhus Convention, E. ORLANDO, *Il dibattito pubblico nella Convenzione di Aarhus e nella legislazione europea*, in *Istituzioni del federalismo*, 3, 2020, 571-605.

39 See *Communication from the Commission on the precautionary principle*, COM/2000/0001 final, in www.eur-lex.europa.eu, Brussels, 2 February 2000.

40 In these terms, clearly, see V.M. BOMBARDELLI, *Fra sospetto e partecipazione: la duplice declinazione del principio di trasparenza*, in *Istituzioni del federalismo*, 3-4, 2015, 657 s.

(2017/2772 (RSP)) which recognizes that «the potential of DLT and Blockchain can constitute a tool that strengthens the autonomy of citizens, giving them the opportunity to control their data and decide which ones to share in the register, as well as the to choose who can see such data» and underlines that the aforementioned technologies can modify some existing paradigms in the administrative procedure, encouraging the disintermediation and decentralization of some activities and some sectors in order to favour both the simplification of procedures (in particular by streamlining the preliminary phase), and the democratic participation of citizens. In the wake of these initiatives, the “environment”⁴¹ value intensely conforms the “new” relationship between citizens and public administration aimed at a significant reduction of the information asymmetry in terms of sustainable development and environmental integrity: in the context of the art. 6.2 of the Paris Agreement, there is a space for distributed ledger and Blockchain technologies, in which information relating to carbon emissions converge, providing a guarantee of transparency and verifiability of the same⁴².

Given this minimum core, it should be emphasized that the latest project act, in the context of the fight against climate change, for the enhancement of distributed ledger technologies is represented by the considerations of the UNFCCC Secretariat which recognized «the potential of Blockchain technology for contribute to greater action and sustainability for the climate» as a useful tool in carbon emissions trading, clean energy trading, climate finance and monitoring of greenhouse gas emissions.

After having framed the measures adopted in terms of environmental protection, participation, transparency and digital transition in the supranational context, it is appropriate to conclude this reconstruction with an analysis of the Italian legislation on the subject. Given the need to fully implement the European Directive no. 2014/52/EU of the European Parliament and of the Council, the guiding principles and criteria of legislative delegation, pursuant to the art. 14, 9 July 2015, no. 114, were the simplification, harmonization and rationalization of environmental impact assessment procedures with the consequent strengthening of the quality of the procedure by aligning with the principles of smart regulation and coherence and synergies with other European and national regulations and policies.

In a similar context, as part of the broad reform program outlined in the *Legge Madia* no. 124/2015⁴³ - implemented by Leg. Dec. no. 179/2016 and by Leg. Dec. no. 217/2017 - the

41 See G. MORBIDELLI, *Il regime amministrativo speciale dell’ambiente*, in *Scritti di diritto pubblico dell’economia*, Giappichelli, Turin, Italy, 1 ss. especially 11 ss.

42 See., *amplius*, M. SCHLETZ, L.A. FRANKE and S. SALOMO, *Blockchain application for the Paris Agreement Carbon Market Mechanism - A decision framework and architecture*, in *Sustainability*, 12, 2020.

43 For a general overview of the so-called Madia Reform see E. FOLLIERI, *La riforma della pubblica amministrazione nella L. 7 agosto 2015, n. 124 ed il ruolo della dottrina*, in *www.giustamm.it*, 2015; M.A. SANDULLI, *Gli effetti diretti della legge 7 agosto 2015, n. 124 sulle attività economiche: le novità in tema di s.c.i.a., silenzio assenso e autotutela*, in *www.federalismi.it*, 2015; B.G. MATTARELLA, *Il contesto e gli obiettivi della riforma. La riforma della Pubblica Amministrazione (l. 7 agosto 2015, n. 124)*, in *Giorn. dir. amm.*, 2015, 5, 621 ss.; A. TRAVI, *La semplificazione amministrativa come strumento per far fronte alla crisi economica*, in *www.giustamm.it*, 2016.

preferred option was to put administrative simplification in the foreground⁴⁴, understood as halving the procedural and computerization phases of communication processes.

The need was also felt to revolutionize the administrative function in the democratic order by strengthening transparency, collaboration and procedural participation and enhancing (especially in art. 1 (1b) of Law no. 124 of 2015) the principle of digital first as a promotional tool towards the digital transition. This process generates the foundations for a digital and totally accessible administration.

The reform process of administrative simplification culminates, in the environmental administrative discipline, with the approval of Leg. Dec. no. 104/2017: in this context, the Italy's Executive branch undertakes to regulate, in an innovative way, the environmental impact assessment (EIA)⁴⁵ procedures, focusing (with particular reference to the relationships between the proposing subject and the proceeding administration) on the reduction of the maximum procedural deadlines and charges document production, on the dematerialization of analogue documents favouring the digital transition and on a pre-screening procedure aimed, in the absence of potential significant or negative environmental impacts, to carry out a preliminary assessment to identify the procedure to be started. These are the cornerstones of the administrative simplifications in environmental matters from which subsequent amendments to the legislation in force originate.

More recently the attention of the national legislator, on the environmental matter, has turned to a further simplification of administrative procedures, with particular attention to the modification of the EIA regulations pursuant to Articles 50 and ss. of Law Decree no. 76/2020, converted in Law no. 120/2020, and the re-engineering and digitization of the cataloguing processes of administrative procedures (these are the focus of the *Agenda per la semplificazione 2020-2023*)⁴⁶.

From an innovative perspective, the Simplifications Law Decree focuses, among other things, on the reduction of the timing imposed on the screening and EIA procedures (while not neglecting changes aimed at ensuring certainty of the terms for the conclusion of the aforementioned procedures), on the simplification of environmental, landscape and related authorizations remediation of contaminated sites, as well as the acceleration of interventions for the development of renewable energy and mobility. For these reasons, in an organic process of system's revision, we could continue with the "rise" of the digital transition, whose evolutionary process includes the enhancement of the once-only principle with the consequent development of digital networks that allow interconnected

44 On the conclusions reached in the White Paper of the European Commission (1993), a group of experts from the EC Commission, chaired by the German Bernahard Molitor, recognize regulatory and administrative simplification as an integral part of the growth of the competitiveness of member countries. See, on this point, COM(95) 288 final/2, *Report of the group of independent experts on legislative and administrative simplification*, in *eur-lex.europa.eu*, 1995.

45 See R. DIPACE, A. RALLO and A. SCOGNAMIGLIO (edited by), *Impatto ambientale e bilanciamento di interessi. La nuova disciplina della Valutazione di impatto ambientale*, Editoriale scientifica, Naples, Italy, 2018.

46 For a review of the *Agenda per la semplificazione 2020-2023*, see G. VESPERINI, *L'Agenda per la semplificazione 2020-2023*, in *Giorn. dir. amm.*, 2, 2021, 151 ss.

environmental monitoring and interoperable capable of communicating automatically, exchanging information and sharing resources⁴⁷.

The most recent stages of the articulated reform process are the actions of the *Agenda per la semplificazione* - provided in art. 15 Leg. Dec. no. 76/2020 and approved, on 23 November 2020, by the Italian Unified Conference and the objectives of the *Piano Nazionale di Ripresa e Resilienza* (PNRR) - aimed at a profound simplification of the provisions concerning the EIA.

The basic idea that runs through the “Simplification and digitalization” chapter of the new *Agenda per la semplificazione* is congenial to the preparation of a sustainable economic model and advocates the need to proceed with administrative simplification in the sectors of environmental protection and green economy which produces the virtuous effect of accelerating investments and works functional to sustainable development, in a certain and transparent framework of rules within which operators and the public administration are able to carry out their social functions effectively.

Furthermore we cannot fail to add the Mission of the PNRR to provide for the digitization and the “green revolution” of the country: the Plan imposes to provide for the simplification and rationalization of environmental regulations, emphasizing, first of all, that the works envisaged by the PNRR in how much urgent measures require a speeding up of the procedure’s conclusion times and, secondly, that the attribution of competences in energy matters to the MITE will allow both a unitary discipline of the related authorization procedures and an integration, between the competences in environmental matters and those relating to energy, functional to ensure a significant simplification of the legal system and sustainable growth of the country in harmony with the pursuit of the ecological transition⁴⁸.

At an overview glance, the imprint of the Green New Deal is striking, which has transformed climate policies and environmental challenges into opportunities for all policy sectors of the Member States⁴⁹, intended as a driving force for the circular economy and which require us to rethink environment (not only as an opportunity for profit, but as a field of experimentation for the development of new models of sustainability)⁵⁰ and to enhance the private contribution (not only in terms of mere collaboration in the adoption of measures, that directly affect their sphere juridical, but also as the management of the administrative function itself to make it more adequate with respect to the public interests pursued)⁵¹.

47 In these terms see F. CARDARELLI, *Usa della telematica*, in *Codice dell’azione amministrativa*, edited by M.A. Sandulli, Giuffrè, Milan, Italy, 2010, 427

48 See *Piano Nazionale di Ripresa e Resilienza*, in www.governo.it, 69 s.

49A *European Green Deal. Striving to be the first climate-neutral continent*, in www.ec.europa.eu, 2019.

50 See, once again, G. VESPERINI, *L’Agenda per la semplificazione 2020-2023*, 156.

51 See the interesting observations made on the matter by the Regional Administrative Court of Liguria, Genoa, Div. I, 18 March 2004, no. 267, in *Foro amm. TAR*, 2004, 642 e in *Giur. merito*, 2004, 1511.

3. The “distributed” EIA procedure and the digital simplification of the Autorizzazione Integrata Ambientale (AIA).

The EIA procedure⁵², as clarified by the Constitutional Court with sentence no. 198/2018, on the one hand, it retains a participatory and informative dimension, aimed at involving and bringing out the various interests underlying the creation of a work with an environmental impact in the administrative procedure; for another hand, it has an authorization function with respect to the single project examined⁵³.

As for the so-called “phase” participatory, the subjects, public and private, involved in the EIA proceedings, standardize their behaviour, which we could understand as “concatenated”, to an action based on compliance with the precautionary principle pursuant to the articles 3-ter and 301 of the Italian Environmental Code⁵⁴.

In this context, the inclusion of recent technological innovations could progress simultaneously to the new forms of interconnection between citizens and public administration, offering a high degree of transparency⁵⁵ in mutual interactions and a disintermediation of processes. Added to this is the need for EU Member States to proceed with the definition of an adequate procedure for monitoring «the significant adverse effects on the environment resulting from the construction and operation of a project, inter

52 The EIA was introduced by *Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment*, in *eur-lex.europa.eu*, 27 June 1985; implemented in Italy with Law 8 July 1986, no. 349; modified with *Council Directive 97/11/EC amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment*, in *eur-lex.europa.eu*, 3 March 1997; *Directive 2003/35/EC of the European Parliament and of the Council providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC*, in *eur-lex.europa.eu*, 26 May 2003; *Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC)*, in *eur-lex.europa.eu*, 23 April 2009. Environmental legislation was harmonized with the *Directive 2011/92/EU of the European Parliament and of the council on the assessment of the effects of certain public and private projects on the environment (codification)*, in *eur-lex.europa.eu*, 13 December 2011; and most recently amended with *Directive 2014/52/UE of the European Parliament and of the council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*, in *eur-lex.europa.eu*, 16 April 2014.

53 In the case-law of that time, this approach was endorsed by Constitutional Court, 14 November 2018, no. 198, par. 5.2 of *Cons. in dir.*, in *Giur. cost.*, 6, 2018, 2415 and in *Riv. giur. ed.*, 1, 2019, 57.

54 On the precautionary principle see, mainly, V. FANTI, *Dimensione della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, Giappichelli, Turin, Italy, 2012, 179-187; R. FERRARA, *I principi comunitari della tutela dell'ambiente*, in ID. (edited by) *Tutela dell'ambiente*, Giappichelli, Turin, Italy, 2005; ID., *Precauzione e prevenzione nella pianificazione del territorio: la “precauzione inutile”?*, in *Riv. giur. ed.*, 2012, 76 ss.; M.A. SANDULLI, *Tutela dell'ambiente e sviluppo economico e infrastrutturale: un difficile ma necessario contemperamento*, in *Riv. giur. ed.*, 2, 2000, 3 ss.

55 See, for full clarification on this matter, V. FANTI, *La pubblicità e la trasparenza amministrativa in funzione del contrasto alla corruzione: una breve riflessione in attesa del legislatore delegato*, in *www.giustamm.it*, 3, 2016.

alia, to identify unforeseen significant adverse effects, in order to be able to undertake appropriate remedial action⁵⁶».

Given these premises, there is a need for a reshaping of the administrative procedure for Environmental Impact Assessment (EIA), more daring than the one carried out with the Leg. Dec. Simplifications and consistent with the requests made by the European Green Deal for a new sustainable industrial policy.

In the digital transition process of the EIA procedure, it is hoped the introduction of the Blockchain technology which can be inserted, in the context of the management and classification of data and information relating to the environment, ensuring an adequate level of IT security, online with national and international best practices. Blockchain technology, allowing to trace the input and output of each process, combines a block 0 and successive blocks with all information relating to a specific operation, in a linear and interconnected way. A unique signature is affixed to each block and all the operations carried out are stored there, creating an interconnected chain that makes the choices unchangeable. The data is unchangeable and, after being validated, flows into a distributed database that is not physically located on a single server, but on several perfectly synchronized computers; therefore, any sudden or fraudulent modification or alteration would emerge only from a comparison with the matrices held by the other blocks⁵⁷.

This solution, applied to environmental proceedings, would allow, after the creation of an interoperable network, to proceed with a proactive transparency of environmental information, overcoming the numerous limits imposed on the display of the same.

This reform intervention would be inserted in the perspective of reducing the complexity of the administrative procedure in environmental matters, imposing the use of common and standardized participatory models, and of encouraging a form of participation which, involving all the nodes of the chain, would determine a sort of co-management, with the administration, of the environmental impact assessment.

A digitized EIA procedure, making use of the tools of procedural participation and monitoring of any negative effects of the processes and systems implemented after the implementation of the project, would allow to carry out more in-depth investigations on the shared information, perfectly compatible with the timescales envisaged for the environmental impact assessment procedure.

The “nodes in the chain” undertake to share all the information and knowledge in their possession about the potentially harmful effects of a given activity, including the results of

56 Recitals no. 35, *Directive 2014/52/UE of the European Parliament and of the council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*.

57 For a technical reconstruction of the Blockchain technology, see L. PAROLA, *Blockchain e contratti intelligenti: uno sguardo al mercato dell'energia*, in *Il teleriscaldamento, la Blockchain e i contratti intelligenti*, edited by E. Bruti Liberati, M. De Focatiis and A. Travi, Wolters Kluwer, Padua, Italy, 2019, 93 ss.; F. FAINI, *Il diritto nella tecnica: tecnologie emergenti e nuove forme di regolazione*, in *www.federalismi.it*, 27 maggio 2020, 93 ss.; M. FAIOLI, E. PETRILLI and D. FAIOLI, *Blockchain, contratti e lavoro. La ri-rivoluzione del digitale nel mondo produttivo e nella PA*, in *Economia e lav.*, 2016, 143 ss.

information on risk situations⁵⁸ and the aspects of the intervention that require constant monitoring. It is common, in fact, that the information in the possession of environmental associations about the state of some natural resources may suggest anomalies or gaps in the documentation produced.

In this context, it is desirable that distributed ledger technologies (Blockchain) suitable for avoiding opportunistic or illegal behaviours detected through *ex post* monitoring actions can be appropriately implemented. These are monitoring related to the implementation of the conditions of the EIA measures conducted with the specific purpose of promptly identifying significant and unexpected negative environmental impacts and adopting the appropriate corrective measures⁵⁹. Starting from these considerations, this application model can be particularly useful, based on total accessibility to the data and on the distributed validation of information, because it would involve not only a significant decrease in anomalies and/or inconsistencies connected with activities that are inherently dangerous for the environment, but, in the perspective of complying with a careful reporting of environmental problems, it could act as a deterrent for potential polluters⁶⁰ and could even contribute to the prevention of environmental damage⁶¹.

There is a need for administrative simplification of the *Autorizzazione Integrata Ambientale* (so-called AIA) procedure⁶²: this is a change in the sign of the digital transition. The procedural authorization action is aimed at carrying out preventive technical assessments by analysing the potential risks of environmental administrative action.

The authorization issuing process established, pursuant to art. 29-ter of Leg. Dec. no. 152/2006, that would be provided for a non-technical summary of the data collected in the request for information to the public, with the consequent possibility of submitting observations. This phase, of which it is composed the AIA release procedure, lends itself to the application of Blockchain technology: capillary validation, so-called timestamp, of the data contained in the application allows, in fact, to the nodes a cross and decentralized control of the operations carried out and the immutability of the data entered in the distributed register, together with the use of asymmetric cryptography, makes any

58 See F. DE LEONARDIS, *Tra precauzione, prevenzione e programmazione*, in *Dal diritto dell'emergenza al diritto del rischio*, L. GIANI, M. D'ORSOGNA and A. POLICE (edited by), Editoriale scientifica, Naples, Italy, 2018, 199 ss.

59 Art. 28 (1) Leg. Dec., 3 April 2006, no. 152.

60 For a detailed analysis of the potential of Blockchain technology in environmental matters, see M. ALLENA, *Blockchain technology for environmental compliance: towards a "choral" approach*, in *Environmental Law Review*, 2020. The A. says that «the "dispersed verification" mechanism made possible by the blockchain is particularly important within a context, such as the current one, in which technological development already makes it possible to involve the general public and regulated entities on a broad scale in the collection of environmental data by facilitating the mechanisms for detecting pollution as well as those for processing, managing and distributing the information concerned. This will be discussed in the first instance in order to demonstrate how the exponential increase in the data available - concerning both environmental conditions as well as the degree of compliance with environmental law - within modern society has not yet however been accompanied by the implementation of effective systems for verifying the reliability of those data».

61 See, in legal literature, A. POSTIGLIONE, *Il manuale dell'ambiente*, in *La Nuova Italia Scientifica*, Milan, Italy, 1984, 51.

62 For a reconstruction of the EU and national legislation on AIA, see C. ZANETTE, *L'ambiente. Manuale normo-tecnico*, edited by E. Blasizza, Wolters Kluwer, Milan, Italy, 2020, 204 ss.

subsequent alteration aimed, for example, to obscure any polluting emissions. Further confirmation of the potential of the application of the Blockchain platform to the AIA is given by the Italian's *Conferenza decisoria di servizi in forma simultanea*, pursuant to the art. 14-ter Law no. 241/1990, convened by the competent authority for the purpose of issuing the integrated environmental authorization.

The Italian's *Conferenza di servizi*, as a preordained venue to ensure the transparent comparison of potentially conflicting interests, is well reconciled with the implementation of this technology, favouring, through the validation of the data and information provided, undoubted benefits in terms of transparency and reduction of procedural timing.

Lastly, it is possible to incentivize the use of the Blockchain for any control, inspection or *ex post* monitoring activity, compliance with the conditions and obligations imposed by the AIA, carried out by ISPRA, for state-owned plants, and by ARPA, for plants located in the sea. In the context of environmental controls, it is, in fact, desirable to support public authorities by associations and individuals to guarantee the formal correctness and timeliness of the data entered in the register⁶³.

The above arguments can be adequately reflected in a system of controls structured in a distributed register, in which a renewed pact between citizens and public administration is substantiated, emancipated from the original model and inserted in a renewed system of environmental authorizations.

4. Some concluding remarks.

The discussions held in this paper take on a particular significance precisely about the incessant process of simplification in environmental matters which sees as direct protagonists both the EU Member States and European citizens, engaged in the search of new horizons that allow greater knowledge and verifiability of the data and documents included in the registers distributed, with the primary aim of proposing new environmental protection mechanisms.

For decades, juridical institutions conceived for environmental protection preferred, compared to *diritto amministrativo paritario*⁶⁴, the use of forms of authoritarian organization irreconcilable with the constitutionally oriented subsidiary perspective⁶⁵.

But the stratified and intense simplification of environmental legislation, while acknowledging that environmental protection is one of the fundamental rights of the person and one of the fundamental interests of the community, had the advantage of undermining, even if in small steps, the idea that environmental protection can rise to a

⁶³ See, in particular, M. ALLENA, *Blockchain technology for environmental compliance: towards a "choral" approach*.

⁶⁴ See, in these terms, the fundamental paper by F. BENVENUTI, *Per un diritto amministrativo paritario*, in *Studi in memoria di E. Guicciardi*, Cedam, Padua, Italy, 1975, 807 ss.

⁶⁵ The issue of administrative subsidiarity emerges in the context of institutional coordination, see, mainly, G. BERTI, *Il coordinamento, parola-simbolo tra gerarchia ed equiordinazione*, in *L'amministrazione della società complessa*, edited by G. Amato and G. Marongiu, Il Mulino, Bologna, Italy, 1982, 34 s.

negative limit to procedural participation. A simplification which, on the basis of the conclusions reached with the Mandelkern report, «cannot be a one shot policy⁶⁶», has developed on a regular basis with consequent periodic evaluation and possible correction of the results achieved over time⁶⁷.

For these reasons, in the pursuit of the United Nations Sustainable Development Goals (SDGs), the need to incentivize “new” forms of collaboration that help to reduce fraudulent episodes and discourage behaviours that cause pollution or violation of human rights, making it possible - through accessibility - the transparency and traceability of global supply chains, favouring a sort of general monitoring of the work of administrations⁶⁸. Furthermore, we cannot fail to add that the implementation of emerging technologies - among which the Blockchain stands out - although it affects the transparency of shared data, it moves on a harmonious level compared to the security of the same: a security guaranteed both by the exclusivity recovery of information of close interest and from the cryptographic system for the protection of the privacy of each citizen.

In conclusion, it can be argued that the use of Blockchain technology undoubtedly represents an optimal solution to facilitate the simplification process of environmental authorizations, guaranteeing a plurality of benefits capable of facilitating the interoperability of data (even between the different states Union). The future applications of artificial intelligence, Blockchain and smart contracts in environmental matters require, on the one hand, a rethinking of procedural models and, on the other hand, an overcoming, in the context of the articulated system of environmental controls, of the many limitations of command and control tools.

The choice of the Blockchain paradigm represents, at present, the most proportional option, given the ability to provide positive solutions where traditional approaches have shown their shortcomings (or have even failed) and to offer the greatest number of advantages, in qualitative terms, for the safety and ease of access to information relating to national and international financing in environmental matters⁶⁹.

66 *Mandelkern Group on Better Regulation, Final Report, Part. II, Recommended practices*, 13 November 2001, in www.federalismi.it.

67 On the theme of simplification as a “permanent revolution”, see F. MERUSI, *La semplificazione: problema legislativo o amministrativo?*, in *Nuove Aut.*, 2008, 3-4, 335 ss.

68 See, among the many, A. ROMANO TASSONE, *Il controllo del cittadino sulla nuova amministrazione*, in *Dir. amm.*, 2002, 269 ss.

69 See S. BRADEN, *Blockchain potentials and limitations for selected climate policy instruments*, in www.climateledger.org, 2019, 46 in which it is specified that «a Blockchain-based solution facilitates the link of payments to concrete results via a decentralized platform. Beneficiaries of climate finance such as individuals, communities or entities could input their feedback peer-to-peer in a safe and reliable way, while making it available to others».

3. Report

THE WASTE CYCLE MANAGEMENT AND THE PROTECTION OF HEALTH AND ENVIRONMENT: THE ROLE OF THE PRECAUTIONARY PRINCIPLE.

Adriana Ciafardoni

ABSTRACT: This paper aims to analyse the role that the precautionary principle can play in the waste management activity, which is considered an integral part of environment and ecosystem protection actions. After a careful analysis of the function of the principle in the various phases of the so-called waste cycle, with particular reference on the theme of classification of waste coded with mirror entries, the reflection focuses on the impact of the Covid-19 emergency. As the last, is treated the relationship between the precautionary principle and the circular economy.

TABLE OF CONTENTS: **1.** Introductory considerations. – **2.** The application of the precautionary principle in the complex waste cycle management. – **3.** The impact of the Covid-19 emergency – **4.** Protection of health and the environment, between the precautionary principle and the circular economy. Brief concluding remarks.

1. Introductory considerations.

The precautionary principle has become an essential criterion for the management of any human activity that – directly or indirectly – may have an impact on the environment⁷⁰. In fact, this Principle works in situations of uncertainty, due to the lack of scientific knowledge⁷¹. It imposes on States, whenever potential risks may occur, to ensure a high level of protection for human health and the environment⁷². In addition, demanding the adoption of precautionary measures in cases of scientific uncertainty about the occurrence of harmful events, it indirectly represents the level of acceptability of the risk that the performance of anthropogenic activities typical of human settlements may pose to the community. On the other hand, it is common ground that the precautionary principle, as well as the principle of preventive protection, are “strong” rules of the European system in the field of environmental protection⁷³.

Therefore, it cannot be denied the role that this principle can play in the (very complex) waste management activity, which is considered an integral (and central) part of environment and ecosystem protection actions⁷⁴.

In this way, the precautionary principle becomes a tool which can reduce (and control) the negative consequences for health and the environment that may arise in the various phases of the so-called waste cycle (waste collection, treatment and recovery or final disposal). In fact, in accordance with the provisions of the Community Law⁷⁵ and as provided by Article 178 of the Italian Environmental Code, waste management should be done in accordance with the principles of precaution, prevention, sustainability, proportionality, accountability and cooperation of all parties involved.

In particular, the precautionary principle plays a primary role as a procedural pre-principle⁷⁶ that the public administration and the judicial authorities must (logically) apply in advance of any other, as an element capable of assessing the abstract possibility of concrete damage⁷⁷.

70 L. BUTTI, *Principio di precauzione, Codice dell'ambiente e giurisprudenza delle corti comunitarie e della Corte Costituzionale*, in *Riv. Giur. Amb.*, 2006, 5, 809-826.; F. DE LEONARDIS, *Coordinamento e sussidiarietà per l'amministrazione di emergenza*, in *Foro amm. - Cons. Stato*, 2005, 10, 3118-3130; R. FERRARA, *Emergenza e protezione dell'ambiente nella «società del rischio»*, in *Foro amm. - Tar*, 2005, 10, 3356-3364.

71 F. FOLLIERI, *Precauzione, prevenzione e legalità nell'emergenza da Covid-19*, in *PA-Persona e Amministrazione*, 2020, 2, 84.

72 A. GRAGNANI, *Il principio di precauzione come modello di tutela dell'ambiente, dell'uomo, delle generazioni future*, in *Riv. dir. civ.* 2003, 1, 9.

73 R. FERRARA, *I principi comunitari della tutela dell'ambiente*, in *Dir. amm.*, 2005, 3, 526.

74 *Ex multis*, Constitutional Court, 23 December 2019, no. 289; Constitutional Court, 26 November 2018, no. 215.

75 At first, the Art. 3 (1) of the European Council Directive 75/442/EEC of 15 Jul. 1975, imposes Member States to take «appropriate steps to encourage the prevention, recycling and processing of waste, the extraction of raw materials and possibly of energy therefrom and any other process for the re-use of waste». Later, the Art. 4 (2) of the European Parliament and Council Directive 2008/98/EC of 19 Nov. 2008, provides that «Member States shall take into account the general environmental protection principles of precaution and sustainability, technical feasibility and economic viability, protection of resources as well as the overall environmental, human health, economic and social impacts».

76 F. DE LEONARDIS, *Il principio di precauzione nell'amministrazione di rischio*, Giuffrè, Milan, Italy, 2015, 322.

77 V. FANTI, *Dimensioni della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, Giappichelli, Turin, Italy, 2012, 182-183.

Furthermore, with regard to waste management, the precautionary principle is expressly regulated by Article 301 of the Italian Environmental Code. This article, on the one hand, admits the intervention of the administration in the event of even potential dangers (first paragraph) and, on the other hand, states that the risk must be concretely identified following a preliminary objective scientific assessment (second paragraph). In this way, the concept of “probable risk” was introduced, causing the overcoming of the maximalist and minimalist version of this principle. The first and the largest version of this principle has been also defined by careful doctrine⁷⁸ as the “green version” of the principle and requires that, in case of doubt, the application of the precautionary measure is always necessary, implying an absolute intolerability of the risk. The second version runs diametrically contrary to the first one and aims to exclude the State intervention before the damage or danger is ascertained.

At present, however, a “certain” or “possible” degree of danger cannot legitimate the administration’s intervention, but it must be the “probable” and balanced with other principles⁷⁹, such as that of reasonableness⁸⁰, prevention⁸¹ and proportionality⁸².

2. The application of the precautionary principle in the complex waste cycle management.

After these considerations, the question is how the precautionary principle operates in the area of waste management.

This principle requires an action on the potentially negative consequences of waste management impact on the environment, through a comprehensive risk assessment based on available scientific and technical data and the latest research findings.

Rebus sic stantibus, this principle operates at every stage of the waste cycle: from its creation and, therefore, classification, to its disposal/recovery. It will therefore be necessary to focus on those fractions of waste cycle that best enable us to understand the operation of the precautionary principle.

First, the use of this principle can be found in the treatment and handling of the product and in the more delicate disposal phase. At this point, it cannot be denied the possible harmful effects for the community, which the treatment of hazardous material (and others) can cause.

78 F. DE LEONARDIS, *Tra precauzione e ragionevolezza*, in *Federalismi.it*, 2016, 2, 5; ID., *Il principio di precauzione*, in M. RENNA and F. SAIITA (edited by), *Studi sui principi del diritto amministrativo*, Giuffrè, Milan, Italy, 2012, 419-424.

79 On the relational nature of the precautionary principle, see V. FANTI, *Dimensioni della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, 179-187.

80 Criminal Court of Cassation, Div. III, 09 October 2019, no. 47288.

81 Council of State, Div. VI, 05 December 2002, no. 6657; Criminal Court of Cassation, Div. IV, 15 May 2014, no. 20223. In doctrine see, A. MURATORI, *Divagando sul concetto di deposito temporaneo e connessi requisiti (nota a cass. Pen. N. 20223/2014)*, in *Ambiente&Sviluppo*, 2014, 8-9, 593-602.

82 Regional Administrative Court of Tuscany, Florence, Div. II, 31 August 2010, no. 5145.

In particular, it is during the phases of waste storage and disposal that there are the most problematic aspects, especially about the possible environmental, health, and socioeconomic effects.

Specifically, the disposal phase – and in the same way the storage phase –, as an intrinsically dangerous activity, requires the adoption of necessary precautions and prudential measures to prevent polluting phenomena that may damage the territory and the health of the community⁸³, as well as that of ecological operators.

However, the most interesting aspect for doctrine and jurisprudence is the delicate (and debated) theme of classification of waste coded with mirror entries. On this theme, the Court of Justice of the European Union has recently intervened⁸⁴. In particular, waste can be coded with mirror entries when is identifiable with a pair of codes of the European Waste Code, which permit to classify a waste like “dangerous” or “not dangerous”, depending on the higher or lower concentration of harmful substances in the waste concerned. Thus, this classification includes waste that cannot be aprioristically classified as necessarily harmful or not harmful to health.

In particular, the Court of Justice was asked to rule on a reference for a preliminary ruling by the Italian Court of Cassation⁸⁵, on the waste producer’s obligations regarding classification and treatment. This is a particularly delicate situation, both for the uncertain nature of mirror coded waste and the possible economic implications related to producer’s obligations.

The Court of Justice, in its ruling of 28 March 2019⁸⁶, established the need for the producer to carry out a prior analysis of the waste for the assignment of the European code, to analyse the composition of the waste and understand its degree of hazardousness.

In this sense, the use of the indicative hazard code is only admissible when following a complete risk assessment, also considering the specific circumstances of the concrete case, there are objective elements that make this classification necessary, in accordance with a probabilistic risk assessment. Therefore, there is not a presumption of hazardousness of the waste, but in any case, the waste producer must search hazardous substances that may reasonably be found in it.

On the other hand, the Court specified that where technical and scientific data resulting from studies carried out, are not sufficient to determine with certainty the existence and extent of the risk, the application of the precautionary principle justifies the adoption of stricter measures to protect the public health. Thus, in accordance with that approach,

83 Council of State, Div. IV, 04 December 2017, no. 5668; Regional Administrative Court of Liguria, Genoa, Div. II, 15 October 2010, no. 9501.

84 F. GIAMPIETRO, *Sui rifiuti con codice a specchio: cronistoria di un dibattito processuale*, in *Ambiente & Sviluppo*, 2020, 8-9, 597-605; L. GIAMPIETRO and A. POERIO, *I rifiuti con codici a specchio: la Corte UE bocchia le tesi della “presunzione di pericolosità” e della “certezza” (nota a CGUE 28 marzo 2019, c 487 - 488 - 489/17)*, in *Ambiente & Sviluppo*, 2019, 5, 349-361; A. GALANTI, *La classificazione dei rifiuti con “codice specchio”. Dalla commissione europea un contributo di chiarezza*, in *DPC*, 2018, 5, 177-216.

85 Criminal Court of Cassation, Div. III, 27 July 2017, Ordinance no. 37460.

86 Court of Justice of the European Union, 28 March 2019, Joined Causes C-487/17 to C-489/17.

which was also adopted by subsequent national case law⁸⁷, the precautionary principle operates as a parachute and intervenes, residually, if the uncertainty of waste composition may threaten health and the environment.

3. The impact of the Covid-19 emergency.

The foregoing is worsened by the spread of the Covid-19 emergency, which is characterised by the absence of empirical certainties on the possibility of preventing and managing risks for human health⁸⁸, with repercussions in various sectors, even far from the medical one.

In this sense, the administrative law of the emergency⁸⁹, understood as the organisational structure of the public administration functional to respond to *extra ordinem* situations, makes it necessary to use extreme measures, because the concrete circumstances preclude the possibility of resorting to the usual institutions of administration. In addition, the general condition of uncertainty places the precautionary principle at the basis of the public administration activity⁹⁰.

Among other things, it should be borne in mind that, although the health emergency is not an environmental emergency⁹¹, the impact has been particularly negative even, for example, in the sector of waste management⁹². In fact, the spread of the pandemic emergency led new needs, such as the management of the complex processes of collection, treatment, and disposal of potentially contaminated waste (as urban waste from homes where covid-19 positive individuals live or stay in compulsory isolation, or waste from healthcare facilities subject to infectious risk). In this new context, there is a need to protect the public health, also in relation to the protection of waste system operators, who are personally engaged in the treatment of infected material.

The exponential increase in the use of personal protective equipment⁹³, which is not yet recyclable and, moreover, can be infected or potentially infected, requires a new approach to the treatment of waste material, inspired by the precautionary principle.

87 In the same way, see also, Italian Criminal Court of Cassation, Div. III, 21 November 2019, no. 47288. On this point, see in doctrine, F. GIAMPIETRO, *Codici a specchio: la Cassazione interpreta la sentenza della Corte di Giustizia Ue (nota a Cass. pen. n. 47288/2019)*, in *Ambiente & Sviluppo*, 2020, 1, 12-20.

88 A. BARONE, *Emergenza pandemica, precauzione e sussidiarietà orizzontale*, in *PA- Persona e Amministrazione*, 2020, 1, 187.

89 See, M. RICCI, *Il potere di ordinanza nella gestione delle emergenze ambientali*, in *AmbienteDiritto.it*, 2019, 2, 9-10.

90 See, F. DE LEONARDIS, *Il principio di precauzione nell'amministrazione di rischio, passim*.

91 D.E. TOSI, *Emergenza e tutela ambientale nel sistema delle fonti tra problemi definitivi e rapporto tra ordinamenti*, in *AmbienteDiritto.it*, 2019, 4.

92 Report of "Istituto Superiore della Sanità", *Indicazioni ad interim per la gestione dei rifiuti urbani in relazione alla trasmissione dell'infezione da virus SARS-CoV-2*, 31 May 2020. In the text, it is written that the virus is able to survive from 48 hours to 9 days on surfaces.

93 According to the report of Italian *Commissione Ecomafie* on "*Emergenza epidemiologica Covid-19 e ciclo di rifiuti*", every day in Italy are used approximately 37,5 millions of face masks and approximately 80 million of surgical gloves, that approximately are equivalent to 1.240 tonnes every day.

In doctrine, it has been underlined how the administrative jurisprudence, developed during the emergency, favours an approach inspired by the principles of precaution, prevention and proportionality⁹⁴. These principles have a central importance also – and especially – in the field of waste management: it is the need to prevent risks, for example, through exceptional instruments such as contingent and urgent ordinances and to assess "precautionary" the possible consequences of the adopted measures⁹⁵.

Indeed, contingent and urgent ordinances have become a valve⁹⁶ with regard to exceptional and unforeseeable situations such as the pandemic emergency, being an unspecified act in its content and able to derogate from the ordinary rules⁹⁷. In fact, the Circular of the Ministry of the Environment no. 22276 of 2020 identifies, in the ordinances regulated by Article 191 of Leg. Dec. no. 152 of 2006⁹⁸, a necessary tool to overcome this moment of great criticality of the system and allow the plants to manage any overloads.

Moreover, the possibility of resorting to these ordinances is justifiable in the light of the precautionary principle. This principle allows, in exceptional situations, the possibility of resorting to acts that are indeterminate and atypical in the content, which may derogate from primary legislation and this allow, in cases of scientific uncertainty, to ensure the protection of health and the environment.

In this way, most of the Regions started to issue *extra-ordinem* ordinances to meet the needs arising from the pandemic⁹⁹, regulating (in a completely disorganised manner) the waste issue. In particular, on the one hand, they intervened to increase the storage capacity of the plants, to increase the quantity and timing of the storage at the collection centres and the maximum thermal capacity. On the other hand, in order to protect covid-19 positive individuals and the operators of waste sector, have been laid down the precautions that ecological operators must take, as well as the practices that those who are positive to covid-19 or in compulsory isolation must follow and the guidelines that operators of health facilities subject to infectious risk must precautionary put in place.

In fact, the use of such orders has always been the subject of extensive debate in doctrine and jurisprudence, aimed at identifying the limits of their operability. It is possible to identify a limit in the necessary respect for the general principles of the system and those laid down in environmental legislation, according to the provisions of the Art. 3 *bis* par. 2 of Leg. Dec. no. 152 of 2006.

94 M.S. BONOMI, G. BUTTARELLI, M. MARLANNA, M.C. POLLICINO, C. RAMOTTI and A. RENZI, *Diritti fondamentali e Covid-19*, in *Giorn. Dir. Amm.*, 2020, 5, 681.

95 M.P. CHITI, *Il rischio sanitario e l'evoluzione dall'amministrazione dell'emergenza all'amministrazione precauzionale*, in *Riv. ita. dir. pubbl. com.*, 2006, 1, 2.

96 M.S. GIANNINI, *Lezioni di diritto amministrativo*, Giuffrè, Milan, Italy, 1950, 102.

97 See M.S. GIANNINI, *Potere di ordinanza e atti necessitati (commento a Cons. Stato, sez. V, 31 gennaio 1948, n. 76)*, in *Giur. Compl. Cass.*, 1948, now in *Scritti*, II, Giuffrè, Milan, Italy, 1939-1948, 954.

98 The norm follows the Article 13 of the Leg. Dec. no. 22/1997 (so-called Ronchi decree), that in turn follows the article 12 of the Presidential Decree no. 915/1982, with reference to art. 5 of Law no. 225/1992, as well as the addition of the Prime Minister, the Minister of Productive Activities among the subjects to communicate the issue of orders.

99 *Ex plurimis*, Order of Lombardy Region, no. 520 of 1 April 2020 e no. 554 of 9 May 2020; Order of Apulia Region, no. 206 of 11 April 2020; Order of Latium Region, no. 22 of 1 April 2020; Order of Sicily Region, no. 1/Rif of 27 March 2020 and no. 2/Rif of 25 September 2020.

Instead, from a practical point of view, in jurisprudence the hypotheses of illegitimacy of these ordinances are, for the most part, traced to the lack of the necessary prerequisites for the adoption of the act¹⁰⁰, to the absence or inadequacy of the preliminary investigation¹⁰¹ and, above all, to the violation of the principles of proportionality, reasonableness and adequacy¹⁰². The precautionary principle, on the other hand, operates as a pre-principle, logically preordained to the application of any other which, even if it is not sufficient to legitimise recourse to an *extra-ordinem* power¹⁰³, remains, however, an essential and indispensable criterion of legitimacy for the use of these instruments.

4. Protection of health and the environment, between the precautionary principle and the circular economy. Brief concluding remarks.

In the light of the just described picture, some brief considerations can be made.

First, the waste sector seems to live in a state of permanent emergency, due to the possible interference of organised crime, the hypertrophy of regulations typical of this sector¹⁰⁴ and the inadequacy of existing plants and structures. An inadequate (or illegal) waste management has undoubted repercussions on the environment and health. Moreover, the situation described above is worsened by the proliferation of the current pandemic emergency. In fact, on the one hand, the progressive increase in the production of infected (or potentially infected) waste shows the inadequacy of the existing regulatory and plant structure, and, on the other hand, the increase in national and international investment aimed at filling the gaps in the system further exposes the sector to illegal activities.

Hence the necessary application of the precautionary principle in the various phases of the so-called waste cycle, which makes it necessary, in the presence of potential environmental and health hazards, to adopt measures to prevent and control possible risks. This principle thus becomes a rule of administration and management of the danger

100 Council of State, Div. V, 26 July 2016, no. 3369.

101 Regional Administrative Court of Campania, Naples, Div. I, 6 July 2009, no. 3732.

102 See the analysis conducted by R. CAVALLO PERIN, *Il diritto amministrativo e l'emergenza derivante da cause e fattori esterni all'amministrazione*, in *Dir. Amm.*, 2005, 1, 799-800 and by S. GARDINI, *Le ordinanze sindacali contingibili e urgenti. Nuovi scenari e nuovi poteri*, in *federalismi.it*, 2018, 15, 11. In the most recent jurisprudence see, Regional Administrative Court of Abruzzo, Pescara, Div. I, 28 November 2019, no. 290; Regional Administrative Court of Campania, Naples, Div. V, 5 June 2019, no. 3041; Regional Administrative Court of Sardinia, Cagliari, Div. I, 4 May 2018, no. 406; Regional Administrative Court of Campania, Salerno, Div. II, 10 October 2018, no. 1406; Regional Administrative Court of Campania, Naples, Div. V, 6 March 2018, no. 1409; Regional Administrative Court of Piedmont, Turin, Div. II, 24 November 2017, no. 1271.

103 Council of State, Div. IV, 11 January 2021, no. 344.

104 See the succession of state legislative reforms (Law no. 308/2004; Leg. Dec. no. 152/2006; Leg. Dec. no. 4/2008; Leg. Dec. no. 205/2010; Leg. Dec. no. 121/2011; Leg. Dec. no. 68/2015) and the transposition into national law of the so-called "*Pacchetto rifiuti*" (EU Directive 2018/849; EU Directive 2018/850; EU Directive 2018/851; EU Directive 2018/852).

intrinsic to the individual activity, capable of developing a structured strategy¹⁰⁵ of control and prevention of the problem.

In other words, it is necessary to evaluate and (eventually) apply all necessary precautions when, due to uncertainty and incomplete scientific knowledge about the effects of the treatment, storage and disposal of the waste, it is not possible to reasonably determine or exclude in advance the existence of a risk to the environment or health¹⁰⁶.

Thus, the public health and the protection of the environment find a sure bulwark in the application of the precautionary principle, to be balanced, however, with other principles, requiring that the precautionary measures adopted are reasonable and proportionate to the risk¹⁰⁷. In this way it is possible to find the right balance in order to legitimise interventions where there is a probable risk, and not merely possible or even certain.

However, if we look closely, it is on the higher and more general level of prevention that it is possible to implement an effective protection of health and the environment, through the adoption of policies that, in a precautionary and preventive manner¹⁰⁸, make it possible to limit the production and the subsequent disposal of waste. A higher level of community well-being can only be achieved by intervening upstream of the problem, i.e. by reducing the use of non-reusable material and by intervening indirectly to reduce potentially dangerous activities such as waste incineration and the construction of plants and landfills.

While measures, such as the use of controlled landfills and modern incineration plants, can be considered solutions to minimise the impact of waste on the environment, it is only through the development of a system that can, where possible, recover used materials that action to protect the environment and health can be taken.

The European Union's most recent measures on waste have moved in this direction¹⁰⁹. In fact, the transition to a circular economy, which had already begun with two communications in 2014 and 2015¹¹⁰, was concretely achieved through the approval of the so-called "second package on the circular economy"¹¹¹. For its part, the Italian legislator, with Legislative Decree no. 116 of 3 September 2020 – in implementation of Directive (EU)

105 R. FERRARA, *Emergenza e protezione dell'ambiente nella «società del rischio»*, 3358.

106 V. FANTI, *Dimensioni della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, 17-18.

107 V. FANTI, *Dimensioni della proporzionalità. Profili ricostruttivi tra attività e processo amministrativo*, 181-182.

108 On the distinction between prevention and precaution, F. DE LEONARDIS, *Principio di prevenzione e novità normative in materia di rifiuti*, 14-42

109 F. DE LEONARDIS, *Il diritto dell'economia circolare*, in *riv. quadr. dir. ambiente*, 2020, 1, 62; ID., *Economia circolare: saggio sui suoi tre diversi aspetti giuridici. Verso uno stato circolare?*, in *Dir. amm.*, 2017, 1, 163.

110 European Commission, Communication of the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, «Towards a circular economy: a zero waste programme for Europe», Brussels, 25.9.2014, COM (2014) 398 final/2; European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, «Closing the loop - An EU action plan for the Circular Economy», Brussels, 2.12.2015 COM (2015) 614 final.

111 Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 and Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018.

no. 2018/851 – has influenced *funditus* on part IV of Legislative Decree no. 152/2006, with a view to developing a new approach to waste management aimed at increasing the so-called circular economy¹¹².

Therefore, while on the one hand the precautionary principle must be applied to waste management, given the complexity and sensitivity of the material, on the other hand the green revolution is pushing towards an enhancement of the integrated waste cycle, to make it as safe and environmentally sustainable as possible.

In the light of the above, the precautionary principle, which must operate in conjunction with the parameters of reasonableness and proportionality¹¹³, and circular economy criteria must run in parallel, in order to minimise risk situations and make protection of health and the environment not only potential, but effective.

112 A. PIEROBON, *Prime notazioni sul D.Lgs. 116 del 2020 sui rifiuti e sull'economia circolare*, in *AmbienteDiritto.it*, 2020, 4, 553; V. CAVANNA, *Economia verde, efficienza delle risorse ed economia circolare: il rapporto Signals 2014 dell'Agenzia europea dell'ambiente*, in *Riv. giur. ambiente*, 2015, 6; F. DE LEONARDIS, *Il futuro del diritto ambientale: il sogno dell'economia circolare*, in F. DE LEONARDIS (edited by), *Studi in tema di economia circolare*, EUM, Macerata, Italy, 2017, 11; R. FERRARA, *Brown economy, green economy, blue economy: l'economia circolare e il diritto dell'ambiente*, in F. DE LEONARDIS (edited by), *Studi in tema di economia circolare*, EUM, Macerata, Italy, 2017, 39.

113 R. FERRARA, *Etica, ambiente e diritto: il punto di vista del giurista*, in R. FERRARA and C.E. GALLO (edited by), *Trattato di diritto dell'ambiente - Le politiche ambientali, lo sviluppo sostenibile e il danno*, Giuffrè, Milan, Italy, I, 2014, 28.