



Błaszczkowska, W., Tomczyk, D., & Wiśniewski, S. (2024). Neoinstitutional approaches to common-pool resources: Revisiting Elinor Ostrom's framework. *Catallaxy*, 9(2), 41–53. <https://doi.org/10.24136/cxy.2024.004>.

# Neoinstitutional approaches to common-pool resources: Revisiting Elinor Ostrom's framework

WIKTORIA BŁASZCZYKOWSKA

*corresponding author*

Jagiellonian University in Kraków, Doctoral School of Social Sciences, Main Square 34, 31-010 Kraków, Poland

wiktoria.blaszczkowska@doctoral.uj.edu.pl

[orcid.org/0009-0002-9074-7142](https://orcid.org/0009-0002-9074-7142)

DAMIAN TOMCZYK

Jagiellonian University in Kraków, Doctoral School of Social Sciences, Poland

damian.tomczyk@doctoral.uj.edu.pl

[orcid.org/0009-0008-6592-9562](https://orcid.org/0009-0008-6592-9562)

SZYMON WIŚNIEWSKI

Jagiellonian University in Kraków, Faculty of Management and Social Communication, Institute of Economics, Finance, and Management, Poland

sz.wisniewski8@gmail.com

[orcid.org/0009-0002-3717-0022](https://orcid.org/0009-0002-3717-0022)

## Abstract

**Motivation:** Revisiting the neoinstitutional approach to common-pool resources in light of the increasingly popular concept of the sharing economy.

**Aim:** This article aims to explain the evolution and characterization of common-pool resources, with particular attention to the approach presented by Elinor Ostrom.

**Materials and methods:** The article employs the method of critical analysis of literature, including works by G. Hardin, M. Olson, and E. Ostrom.

**Results:** The review shows that despite the long history of shaping the concept of common-pool resources (CPR), reaching back to Aristotle's time, researchers still have not unequivocally defined the optimal way to use them. Elinor Ostrom's research reveals fundamental importance in this regard, in which she makes the functioning of CPRs dependent on accompanying institutions, especially those of a bottom-up nature.

**Keywords:** *common goods; common-pool goods; common-pool resources; Elinor Ostrom*

**JEL:** B15; B25; B521

## 1. Introduction

The term “common goods” is used in numerous contexts, often within legal sciences,

economics, philosophy, sociology, or politics, making its precise definition an extremely challenging task. In addition to its interdisciplinary nature, the issue also involves a mul-

titude of concepts spanning different stages of market reality — production, distribution, or consumption. Despite the recognition of common goods since ancient times, it did not receive significant attention in literature until modern times. One of the earliest historical definitions of the issue is attributed to Aristotle, who wrote that the common good is suitable for and attainable only by the community, but shared individually (Dupré, 1993, p. 1). In the following centuries, common goods began to be equated with public goods, resulting in the interchangeable use of the terms in many languages, including Polish vernacular (Prandecki, 2016, p. 57). This situation leads to numerous misunderstandings, which this article seeks to clarify.

The article aims to explain the evolution and characterization of the concept of common-pool resources, with particular emphasis on the approach presented by Elinor Ostrom. The motivation for addressing this topic stemmed from an attempt to revisit the approach to common-pool resources presented by neoinstitutionalists in light of the increasingly popular concept of the sharing economy. For the purposes of the research, the following research questions were formulated:

1. How has the concept of common goods evolved over the years?
2. What is the significance of institutions for the functioning of common-pool resources?
3. What conditions are necessary for the independent functioning of common-pool resources?

The method used in this article was a critical analysis of the literature on common-pool resources, neoinstitutionalism, and the sharing economy. The article analyzes the views of scholars such as Aristotle, G. Hardin, M. Olson, J.S. Stiglitz, and E. Ostrom.

In the initial part of the article, the authors focus on presenting the classification of goods as discussed in the literature, with particular emphasis on public goods, club goods, common-pool resources, and private goods. The following section discusses phenomena closely associated with the concept of common-pool

resources, as proposed by Garrett Hardin, such as the tragedy of the commons and the free-rider effect. The continuation of the analysis involves exploring the role of institutions in the functioning of common-pool resources, based on Elinor Ostrom's work, along with a discussion of the principles she developed as essential for the functioning of self-regulating CPRs. The article concludes with a summary of the key findings and conclusions, along with suggestions for potential areas of future research.

## 2. Literature review

### 2.1. Goods typology

The considerable diversity of goods within the economic system necessitates their classification. This classification is often based on a two-factor typology, which considers the dissimilarities perceived by economists regarding the nature of consumption and the possibility of exclusion from it (Wołyniec, 2013, pp. 57–58). Goods can be categorized based on the nature of consumption into non-rivalrous, where consumption by one participant does not diminish availability or value for others (such as streetlights), and rivalrous, where consumption diminishes availability and value. The second factor is the cost of exclusion from consumption, which can vary. When the cost is low, the exclusion is relatively easy, whereas when it's high, exclusion becomes difficult, if not impossible, often associated with goods for which there is no need to pay for usages, such as seawater or air (Stiglitz, 2004, pp. 150–151). These two factors contribute to the classification of goods into four types: public, club, common pool, and private (Table 1).

The scenario where access to a good is non-rivalrous in consumption and no participant can be excluded from it is termed as “pure public goods” by economists. Examples of these goods include public safety, national defense, or fire protection. It's noteworthy that in this particular situation, the marginal cost of making the good available to the next

person is zero (Stiglitz, 2004, p. 156). In stark contrast to pure public goods are pure private goods, from which anyone can be excluded in consumption, and which are fully rivalrous since their use cannot be simultaneous. Examples of pure private goods include food, clothing, and cars (Wołyńiec, 2013, p. 58).

The other two types of goods are classified as “impure” or “mixed goods” (Alińska, Wasiak, 2014, p. 15). Among these are “club (paid) goods”, which are often local in nature and require a select circle of participants to pay a regular subscription in exchange for the right to use the resource. Due to the need to pay periodic fees, individuals may be excluded from the circle of users. Consumption itself, however, is non-rivalrous, and examples of club goods include a private school or kindergarten (Hofmokl, 2009, p. 28). The second type of impure goods is “common-pool resources” — natural or man-made resources, such as fisheries, pastures, or irrigation systems. While no one can be excluded from their use, their pool is strictly limited, leading to competitive consumption, and maintenance itself incurs a cost. In the case of common-pool resources, there is a risk of loss of ownership or their partial or total degradation (Ostrom, 1990, p. 21).

The emergence of new types of goods at the turn of the twentieth and twenty-first centuries, with Internet resources leading the way, sparked further discussions on classification. During this period, an additional distinction was made between collective private goods, which are essentially private goods but are provided by the public sector for various reasons, for example: municipal services or waste management (Hofmokl, 2009, p. 44), and regulated private goods, which remain under private ownership but are subject to control by a government body for security or liability reasons, such as telecommunications links (Hofmokl, 2009, p. 14). With the introduction of these new categories of goods, it becomes necessary to analyze how they are influenced by the factors previously discussed — competitiveness and the risk of exclusion. The results of this refined classification are presented in Figure 1.

At this point, it is crucial to highlight the necessity of distinguishing between public goods, common-pool resources, and common goods. Despite often being equated with one another, these terms carry distinct economic implications (Prandecki, 2016, p. 56). While public goods and common-pool resources have been previously defined, emphasizing differences in the nature of their consumption and the cost of exclusion, their boundaries are not rigidly defined. They are inherently intertwined with common goods, alongside private collective goods and club goods. Furthermore, it’s important to note that not all common goods are public, as their sharing can occur under various forms of ownership, often restricted to specific collectives such as cooperatives, clubs, village communities, religious groups, or individuals engaged in specific work (Hofmokl, 2009, p. 44). This contradicts the association made by mainstream economists between the type of goods and the level of state participation in their production, distribution, or consumption, as “commonality”, typically extending beyond pure public goods, does not necessarily imply government involvement (Hofmokl, 2009, p. 23).

## 2.2. Distribution of assets

The concept of the primordial community, which was the original form of organization of human communities, was based on common ownership of the means of production, i.e., buildings and tools necessary for obtaining food, i.e., the activities of gathering and hunting, and later farming and ranching. Accordingly, the concept of private value was extremely marginalized and applied only to a small number of personal items, such as clothing and jewelry. This was due to the fact that communities at the time did not produce an economic surplus, and all food was consumed on a regular basis. With the change to a sedentary lifestyle, and thus with the development of agriculture and animal husbandry, communities began to be able to produce a surplus. At that time, widespread private ownership was born, followed by the

structure of the state (Hofmokl, 2009, p. 14). This state of affairs was natural according to Aristotle (2003, p. 3), who writes in the *Politics*: “Every community comes into being for the attainment of some good [...], [and] while all pursue some good, it is primarily done by the foremost of all, which has the most important task and includes all others. This is the so-called state and the state community”.

Aristotle also undertakes a critique of common property, claiming that people who farm on common land fall into strife far more often than those who have their own land and its crops. He argued this thesis with the conflict-generating divisions of the product — unequal to the labor inputs of individuals devoted to their production (Aristotle, transl. 2003, pp. 26–28). Therefore, Aristotle (2003, p. 27) concludes that: “[Property] in principle, however, must remain private. For if each takes care of his own, they will not reproach each other, and they will also produce more when each works for his own benefit, and in eating their harvest they will be guided by nobility according to the proverb: <<between friends all things are in common>>”.

It is noteworthy that the aforementioned nobility, in the form of a community consuming crops (and more), bears resemblance to the modern concept of the “sharing economy”. Aristotle assumes that a person’s private property will be used by their friends and gives examples such as the mutual sharing of slaves, horses, or dogs, should the need arise (Aristotle, translated 2003).

However, with the development of the capitalist system and the rise of private property, considerations of co-management were sidelined. This situation persisted until the second half of the 20th century when the first studies and reports emerged, highlighting the global scale of the environmental crisis. In 1968, as a prelude to the aforementioned changes and the intensification of the environmental movement, an essay entitled *The Tragedy of the Commons* was published by Texas environmentalist Garrett Hardin (1968, p. 1243). In his work, he evokes the image of an accessible common pasture where

farmers graze a fixed number of their private cows. Over time, one farmer, driven by a rational and selfish desire to increase his profit, introduces an additional cow into the pasture. This decision provides him with an income equivalent to that generated by a single cow, but the costs of using the common pasture are distributed proportionally among all farmers (Hardin, 1968, pp. 1244–1245). Gradually, each rancher will make a similar decision, resulting in short-term maximization of their private profits but long-term overexploitation of a common resource and the temporary depletion or complete degradation of the pasture (Gandziarowska-Ziolecka, Średnicka, 2011, p. 9). Hardin’s article was intended to metaphorically illustrate a more complex issue — the problem of excessive global exploitation of natural resources. Nevertheless, his proposed solutions — centralized regulation with a system of sanctions or privatization of the resource — gained attention among economists and politicians, providing arguments for increased state interference in the process of resource production and distribution (Pran-decki, 2016, p. 60).

In the 1950s and 1960s, other concepts related to the use of common-pool resources emerged. One such concept is the so-called “Prisoner’s Dilemma”, attributed to American mathematicians Merrill M. Flood and Melvin Dresher, with its formalization and naming attributed to Canadian Albert W. Tucker (Hofmokl, 2009, p. 33). The story involves two men detained by the police and suspected of complicity in a crime. The police, lacking evidence, place the detainees in separate rooms and present them with the following options: (1) if one testifies and the other remains silent, the testifying individual goes free while the silent one receives a 10-year sentence; (2) if both remain silent, they receive a 6-month sentence for lesser offenses; (3) if both testify, they receive a 5-year sentence each (Zatoń, 2016, p. 74).

The strictly dominant strategy, or the best possible strategy regardless of the other prisoner’s decision, is to “testify”. If the second prisoner remains silent, the first prisoner’s

decision to cooperate results in no sentence, while if the second prisoner testifies, the first prisoner's decision to cooperate reduces their sentence from ten to five years (Zatoń, 2016, p. 75). This solution, in which both choose to cooperate with the police, is dictated by individual rationality but is not valid from the point of view of group rationality, which is optimal in the Pareto sense — a situation in which both defendants remain silent and receive the lowest aggregate sentence (Abramczuk, 2013, p. 44). This theory has been applied to discussions of sharing, where two individuals decide whether to cooperate and contribute to the common-pool resource, in the form of money, time, or energy (“keep silent”), or not to cooperate and refrain from contributing (“testify”). Analogous to the model with prisoners, both individuals will choose the individually rational and safer option of not contributing to the common-pool resource or not cooperating on it (Abramczuk, 2013, p. 43). The apparent maximization of private profit, as seen in the tragedy of the common pasture described earlier, will lead to the neglect or destruction of the common-pool resource, resulting in a decline in both individuals' private profit and aggregate social profit.

The prisoner's dilemma provides a good explanation of free-rider behavior, as described by “the gapper effect.” Gap riders are users of a common-pool resource, the operation of which relies on voluntarily paid fees, not necessarily monetary. However, individuals, characterized by the typical traits of homo economicus, lack incentives to participate in maintaining the resource, as they can use it regardless of their own contribution (Hofmøkl, p. 33). This issue was addressed by American economist Mancur Olson in his 1965 article *The Logic of Collective Action*. In the introduction, Olson discusses the commonly held belief that if members of a group share a common interest, which would benefit each of them if realized, they will act collectively to achieve that interest. However, Olson (1965, p. 2) argues against this thesis, noting

that members of large groups still benefit from the realization of group goals even without actively working towards them. He writes: “If the number of individuals in a group is not small enough, or if there is no coercion or other special tool to motivate individuals to act in a common interest, rational and selfish individuals will not act to achieve their common or group interests. In other words, even if all individuals in a large group are rational and self-interested and would benefit if they acted as a group to achieve a common interest or goal, they will still not act voluntarily to achieve that common or group interest.”

Thus, the author indirectly confirms the existence of the free-rider effect, noting that if an action is required for the common good that would benefit each user, a rational individual will wait for someone else to perform it. Olson attributes this problem to the lack of coercive regulation, but primarily to the large size of the group. Some theorists argue that while this observation may be partially correct, what is more crucial than the size of the community is the perception and evaluation of individual actions by other members. Awareness of being held accountable for one's actions increases the likelihood of contributing to the common-pool resources, and free-ride behavior becomes uncomfortable and shameful (Hofmøkl, 2009, pp. 33–35).

The publications of Olson (1965) and Hardin (1968) led to unequivocally critical conclusions about the functioning of common-pool resources. They emphasize that individuals, driven by rational and selfish motives characteristic of homo economicus, are unable to overcome the dilemmas of collective action. By pursuing strategies seemingly aligned with individual interests, they ultimately jeopardize both group and private benefits (Gandziarowska-Ziołocka, Średnicka, 2011, p. 9). These assertions were challenged by a significant number of researchers outside the mainstream, including the American economist Elinor Ostrom from the New Institutional Economics school.

### 3. Materials and methods

The method employed for this paper was a critical analysis of the literature on common-pool resources, neoinstitutionalism, and sharing economics.

The article explores the perspectives of notable scholars including Aristotle, G. Hardin, M. Olson, J.S. Stiglitz, and E. Ostrom, among others.

### 4. Results

In the literature, neoinstitutionalism functions as a current, drawing to some extent on the achievements of neoclassical economics, particularly in studying the microeconomic theory of rational choice. However, reality suggests a much broader spectrum of interests, extending far beyond market equilibrium models and consumer choice theory (Hofmold, 2009, pp. 51–52). The impetus to broaden horizons and view economics from a perspective that acknowledges the limitations of mathematical methods and the impossibility of encapsulating everything within a single coherent model undoubtedly stemmed from the contributions of one of its creators — Elinor Ostrom (Chmielewski, 2013, p. 131). Authors of neoclassical economic models often employed the *ceteris paribus* clause to eliminate outliers and irregular phenomena that could distort the final result (Hardt, 2018, p. 10). Keeping this in mind, Ostrom advocated for an interdisciplinary approach from the outset of her scientific career, enabling her to draw upon existing solutions and achievements from various disciplines, not limited to the social sciences (Chmielewski, 2013, p. 131).

Elinor Ostrom distinguished herself with her research on the management of common-pool resources, exploring the interaction among groups of actors and proposing numerous solutions to predefined social dilemmas using methods from the neoinstitutional stream (Chmielewski, 2013). In her view, “institutions refer to the rules that people reference when interacting in complex, repetitive

situations across multiple analytical levels” (Ostrom 2012, p. 87). These words align with the definition adopted by the vast majority of representatives within the school of new institutional economics, who assume that: “[Institutions] are the limitations imposed on rational and purposeful actors, allowing (or not) the reconciliation of vested interests with the public interest and minimizing (or not) the transaction costs that impede multilateral beneficial agreements, both in the market and in other spheres of human interaction” (Możdżeń, 2015, p. 67).

Ostrom also emphasizes that the nature of these rules strictly depends on the situation individuals find themselves in at any given moment. They may conform to the norms accepted in the community or create and impose their own interpretations (Ostrom 2012, p. 88). Additionally, the results of the author’s research in her laboratory (Ostrom, 2002a, p. 139), where she analyzed the behavior of individuals in the process of interaction, in relation to the *homo economicus* principle in economics, are also intriguing. During the analysis, Ostrom employed a game known as the public goods game, where participants were tasked with distributing a certain pool of funds, which they could choose to donate to public benefit or keep for themselves. Importantly, donating resources to the general public resulted in an increase in the level of benefits achieved by the group, but failure to do so did not exclude the subject from using the shared resources (Ostrom, 2002a). The findings obtained in the conducted research can be viewed as optimistic because they demonstrate that despite the existence of entities guided solely by their own interests during the game, there were also conditional cooperators among the participants — individuals willing to cooperate in achieving common benefits if circumstances favored it (Biejat, p. 3). Furthermore, Ostrom concludes that the key role in this matter is played by the aforementioned institutions, understood as accepted rules. Awareness of their existence, the possibility of creating them independently, and acceptance by the authorities positively influence the



participants' willingness to cooperate (Biejat, p. 3). This conclusion validates the interdisciplinary approach and thus challenges the accuracy of the homo economicus model behavior (Gandziarowska-Ziolecka, Średnicka, 2011, p. 9).

The findings obtained in the conducted research can be viewed as optimistic because they demonstrate that despite the existence of entities guided solely by their own interests during the game, there were also "conditional cooperators" among the participants — individuals willing to cooperate in achieving common benefits if circumstances favored it (Biejat, p. 3). Moreover, Ostrom concludes that the key role in this matter is played by the aforementioned institutions, understood as accepted rules. Awareness of their existence, the possibility of creating them independently, and acceptance by the authorities positively influence the participants' willingness to cooperate (Biejat, p. 3). This conclusion validates the interdisciplinary approach and thus challenges the accuracy of the model behavior of homo economicus (Gandziarowska-Ziolecka, Średnicka, 2011, p. 9).

This research enabled Elinor Ostrom to begin a polemic against the social dilemmas formulated by Olson (1965) and Hardin (1968), already derived from the works of Aristotle (translated 2003), which drew attention to the ineffective actions taken by individuals for the good of the community, leading to the partial or total destruction of the common-pool's resource, while proposing a solution — privatization or strict regulation linked to sanctions (Cahir, 2003, p. 17). Ostrom devoted an extensive publication to this issue, *Governing the Commons*, published in 1990 (Ostrom, 1990). There, she points out the main shortcoming of Hardin's model, namely, the fact that he wrongly referred to the pastureland, to which he paid attention in his research, as a common-pool resource, since it is not managed in any way and therefore does not deserve such a nomenclature — an arrangement without a management system makes it merely a public type of common good (Prandecki, 2016, p. 60). Additionally, the re-

searcher notes that the tragedy of the common pasture is not the result of a lack of property rights but rather a result of the institutional impoverishment of the entire community and the ranchers themselves, as well as their disposition related to communication problems, lack of trust within the group, and uncertainty about sharing a common fate in the future (Ostrom, 1990, p. 21).

In a similar way, Ostrom challenges the assumptions of the prisoner's dilemma as an explanation for free-ride behavior. She points out the flawed thinking attributed to the interpretation of this event. She concludes that prisoners will betray each other not because they have such a natural inclination, but because there is no institution that allows them to communicate. On the contrary, the institution of imprisonment somehow forces them to testify, which wouldn't have to happen at all in freedom, surrounded by institutions that allow them to cooperate, that is, institutions that would make individuals conditional cooperators (Gandziarowska-Ziolecka, Średnicka, 2011, p. 9).

Against this background, a set of characteristics that, according to Elinor Ostrom (1997, p. 15), exert a positive influence on cooperation between different entities is worth noting (Figure 2). Ostrom notes that the existence of a small group of actors, adequate communication between them, the symmetry of their interests, and a long-term perspective of action reduce the cost of reaching an agreement, as a result of which they have a positive effect on the development of common norms, inducing an increase in trust, reciprocity, and reputation within the group, which in turn translates into the scale of cooperation and ultimately into the level of net benefits.

Many years of research and observation by Elinor Ostrom enabled her to refute Hardin and Olsen's conclusions, based on neoclassical economic models. First of all, she turned her attention to the specific definition of common-pool resources, "which are systems that generate finite amounts of resource units, the use of which by one person subtracts them from the amount of resource units available to

others, with the possibility of simultaneous use by more users”, however, taking into account that once certain limits are exceeded, this will generate negative consequences for the community as a whole (Ostrom, 2002b, p. 1317). She went on to focus attention on a number of cultural, psychological, sociological, and other conditions that affect the circumstances under which an individual makes decisions. Because of these, Ostrom considered top-down solutions — privatization and regulation with a system of sanctions — to be ineffective. Instead, she proposed a bottom-up social contract, based on the group creation of formal or informal institutions that would enable the creation of a self-regulating common-pool resource (Ostrom, 1990, p. 21). She put the assumptions for the operation of such self-regulating CPRs in the form of eight principles and was the first woman in the world to receive the Bank of Sweden’s Alfred Nobel Prize in 2009 for her contributions to economic science (Bentkowska, 2021).

Ostrom’s model of eight rules for the formation and functioning of self-organized CPRs (Table 2), formulated following observations of communities living in mountain pastures in various countries such as Spain, the Philippines, or Switzerland, has significant implications (Ostrom, 2013, p. 126). Before delving into a detailed analysis of these rules, it’s essential to note that the first seven rules pertain to standard common-pool resources, with the exception of the last one, which applies to CPRs of greater complexity.

The first principle articulated by Ostrom (2013, p. 126) implies “the necessity of clearly defining individuals and households with the right to withdraw units of a resource from the CPR, as well as delineating the boundaries of the CPR itself”. This precludes potential conflicts in the future and safeguards the resource from users outside the community (Ostrom, 2013, p. 127). While this principle is easily illustrated concerning fenced pastures, its applicability extends to urban spaces, where delineating boundaries and community membership is equally crucial.

Regarding the second principle, it entails aligning the rules of appropriation of common-pool resources with the circumstances of their creation and transfer (Ostrom, 2013, p. 128). Ostrom illustrates this concept with the example of irrigation methods observed in pastures, where providing appropriators with information about the state of the water body enhances resource efficiency (Ostrom, 2013). This principle is relevant in urban contexts as well, where common-pool resources are owned by the general population, yet subject to management by authorities to prevent exclusive acquisition (Czornik, 2018, pp. 75–76).

The third principle developed by Ostrom (2013, p. 129) assumes that “the majority of individuals affected by current rules can participate in modifying them”. Its content guarantees the presence of users of common-pool resources when defining usage, which allows them to secure their interests while taking into account the presence of other actors. On the other hand, it guarantees a flexible approach to the issue at hand, since any problems with the resource will be immediately reported and resolved by the appropriators as a whole in the course of the formulated rules (Ostrom, 2013). Relating the content of the above-mentioned rule to the urban area, it can be stated that its implementation is often noticeable in the practice of democratic forms of decision-making, concerning selected areas of city functioning. As an example, we can cite the organization of referendums or taking into account the opinions of residents on the issue of the distribution of common financial resources by voting for projects submitted as part of the municipal budget (Czornik, 2018, p. 77). The application of this rule can also be exemplified by contact forms placed on most websites, allowing web users to express their own opinions on the content available there, thus ensuring their participation in shaping it.

The fourth rule describes the functioning of control and supervision mechanisms under conditions of self-organized common-pool resources (Ostrom, 2013, p. 131). Thus, the researcher states that “in the optimal situa-



tion, the monitors, actively performing control over the conditions of CPR and the behavior of the appropriator, are responsible to the appropriators or are themselves appropriators” (Ostrom, 2013). This means that despite the mutual trust of users of the pool of shared resources, their monitoring proves necessary for the good functioning of the entire community. It appears that in urban areas the implementation of the assumptions of this principle is easier than in relation to natural resources, which is due to the peculiarities of urban centers based on the construction of large communities concentrated in a relatively small area (Czornik, 2018, p. 77).

However, another rule developed by Ostrom (2013, p. 131) stipulates that misappropriators who violate the rules of CPR use will be subjected to appropriate punishment on behalf of the other users, or the entities appointed for this purpose. The author notes that this ties in closely with the rule presented earlier, as irregularities spotted through surveillance will be followed by clarification with the imposition of appropriate sanctions (Ostrom, 2013). Thus, this highlights that while taking care of self-interest, it is also necessary to keep track of the actions taken by other entities, as they play a not inconsiderable role in the context of the use of a resource. The functioning of the discussed regularity can easily be seen in the Internet space, as undesirable actions on the part of individual users are immediately corrected by restricting access to the content contained therein (Czornik, 2018, p. 77).

The next principle complements the previous one, since its content implies that “appropriators and their officials have immediate access to inexpensive local ways and places to resolve conflicts between appropriators or between appropriators and officials” (Ostrom, 2013, p. 139). The regularity in question serves as a safeguard in situations of non-compliance with pre-established rules, as it allows appropriators to efficiently enforce the obedience of other members of the collective. In urban structures, the described role is performed by a number of specialized institutions, headed by courts and tribunals (Czornik, 2018, p. 78).

Moreover, according to the seventh principle developed by Ostrom (2013, pp. 140–141), CPR users are guaranteed the opportunity to shape their own rules for the use of the resource. Most often, regulations of this type are created in response to existing arrangements, which, despite efforts, prove inadequate. Again, this is an expression of flexibility in the management of the pool of goods by appropriators, which may be curtailed in the absence of the authorities’ agreement to a particular rule (Ostrom, 2013, p. 141). Turning to the characterization of the last principle, it is important to note that it is different from the previous seven, as it does not refer to standard CPRs, but to assets with a more elaborate and complex structure (Ostrom, 2013). As such, its content implies that “appropriation, delivery, monitoring, enforcement, conflict resolution, and governance activities are organized in numerous layers of <<nested>> enterprises” (Ostrom, 2013). This means that the principles described earlier, along with the subsequent complication of a given structure, are matched to the appropriate level of their management, which in the long run will form a coherent whole.

Concluding the overall consideration of the principles formulated by Ostrom, it can be noted that the effective operation of the common-pool resource is characterized by a high degree of complexity, as evidenced by the dilemmas and difficulties involved. The author points out that users, despite being constrained by systems of supervision and punishment, are afforded a great deal of flexibility in their use of the common-pool resource. These principles can be related to real-life examples of common-pool resources, especially those studied by Elinor Ostrom, confirming the relevance of their elaboration.

## 5. Conclusion

Until today, in the countries of the Global North, the operation of the commons under common-pool resources is considered inefficient and conflictual. This is largely due to Garrett Hardin’s 1968 essay in which he de-

scribed the destruction of the common pasture as a result of the rationale of maximizing private profit for each farmer who overloads the resource by introducing too many cows onto it. Hardin's work itself was intended as a metaphor to warn against environmental crisis and uncontrolled exploitation of natural resources, but it was taken literally by politicians, economists, and the public, allowing for an increased role of the state in the economy and justifying privatization measures. The interrelated prisoner's dilemma and the free-rider effect have also contributed to the negative perception of the sharing economy.

However, these theses were challenged by the work of a leading representative of neoinstitutionalism in economics — Elinor Ostrom. Her interdisciplinary approach, drawing on the contributions of psychology, sociology, as well as management science, combined with laboratory and field work, revolutionized the economic approach to individual decision-making, based at the time solely on the neoclassical paradigm of *homo economicus*. The researcher considered Hardin's proposed solutions to privatization or state regulation ineffective and destructive, while she attributed the behavior of individuals he described to the personal characteristics of individual users. Ostrom also believed that the common pasture described couldn't be treated as an asset of the common pool, due to misleading assumptions — the lack of institutions that would allow individuals to effectively communicate and manage the resource, and consequently save it from disaster. The economist noted a similar level of institutional impoverishment in the case of the prisoner's dilemma, where incarcerated individuals had no real chance to reach an agreement that would give them the most community-beneficial outcome.

Therefore, Elinor Ostrom made the functioning of common-pool resources dependent on the effectiveness of developed institutions — frequently informal ones, which are the result of the formation of certain norms or ways of thinking and take a long

time to mature into their final shape. Thus, she pointed out the potential of bottom-up institutions and the handicap of those established from above — often having no causal power beyond the legal one, as a result of which users find it more difficult to identify with them. The researcher developed a set of eight rules, which are a kind of signpost to facilitate the creation and operation of self-organized common-pool resources, the implementation of which would achieve maximum benefit for the community.

However, Ostrom's research, despite being honored with the Bank of Sweden's Alfred Nobel Prize, has failed to completely dethrone the *homo economicus* paradigm in economic consciousness, which, in the case of sharing decisions, nevertheless leads to suboptimal results in the Pareto sense. For this reason, it is worth pointing out that the issue of the social dilemmas in question leaves a gap for the continuation of such analyses in the future, with the aim of better understanding the phenomena of co-working and sharing, particularly helpful for the popular concept of sharing economics today.

Considering the above considerations, the following research questions can be developed as a basis for further research:

1. How to optimize the economic management of common-pool resources?
2. Which formal and informal institutions have the greatest impact on sustainable management of common-pool resources?
3. How do changing social and technological conditions affect the effectiveness of self-regulating common-pool resources?

In light of the above, the answers to the above questions could serve as a foundation for further research on the effective management of common-pool resources.

## References

- Abramczuk, K. (2013). *Mechanika współpracy z perspektywy teorii gier*, *Tematy z Szewskiej*, 1, 38–55.

- Alińska, A., Wasiak, K. (2014). Czy stabilność systemu finansowego można uznać za dobro publiczne?, *Studia Ekonomiczne Uniwersytetu Ekonomicznego w Katowicach, Finanse — problemy — decyzje*, 198, 13–34.
- Arystoteles, *Polityka*, tłum. L. Piotrowicz. In: Tegoż, *Dzieła wszystkie*, t. I. Warszawa 2003. Retrieved 06.01.2023 from <http://biblioteka.kijowski.pl/arystoteles/polityka.pdf?fbclid=IwAR3GkBe-mRUdtDtMQwX3JpVMx CZvbr6feHjd-BeO7-qaG8hhySLaJSHJtbaAE>.
- Bentkowska, K. (2021). Czym jest tragedia wspólnego pastwiska? Retrieved 06.01.2023 from [gazeta.sgh.waw.pl/po-prostu-ekonomia/czym-jest-tragedia-wspolnego-pastwiska](http://gazeta.sgh.waw.pl/po-prostu-ekonomia/czym-jest-tragedia-wspolnego-pastwiska).
- Biejat, M. *Dobro wspólne a tragedia wspólnego pastwiska wg G. Hardina i teorii działania zbiorowego wg E. Ostrom*. Retrieved 06.01.2023 from [lokalnepartnerstwa.org.pl](http://lokalnepartnerstwa.org.pl).
- Cahir, J. (2003), *The Information Commons, Queen Mary Intellectual Property Working Paper*. Retrieved 06.01.2023 from [ssrn.com/abstract=428584](http://ssrn.com/abstract=428584).
- Chmielewski, P. (2013). Elinor Ostrom. Wybory i decyzje indywidualne a wybory i decyzje zbiorowe — jak unikać dylematów społecznych?, *Decyzje*, 20, 125–139.
- Czornik, M. (2018). Miejskość dóbr wspólnych. Refleksje nad adaptowaniem koncepcji common-pool resources, *Rozwój Regionalny i Polityka Regionalna*, 43, 71–82.
- Dupré, L. (1993). The Common Good and the Open Society, *The Review of Politics*, 55–4, 687–712.
- Gandziorwska-Ziolecka, J., Średnicka, J. (2011). Kapitał społeczny w ujęciu Elinor Ostrom: triumf interdyscyplinarności, *Polityka Społeczna*, 5–6, 7–12.
- Hardin, G (1968). The Tragedy of the Commons, *Science*, 162, 1243–1248.
- Hardt, Ł (2018). Prawa ceteris paribus w ekonomii, *Gospodarka Narodowa*, 1, 9–31.
- Hofmokl, J. (2009). *Internet jako nowe dobro wspólne*. Wydawnictwa Akademickie i Profesjonalne.
- Możdżeń, M. (2015). Współzarządzanie a nowa ekonomia instytucjonalna. In: S. Mazur (Ed.), *Współzarządzanie publiczne* (pp. 65–92). Wydawnictwo Naukowe Scholar.
- Olson, M. (1965). *The Logic of Collective Action*. Harvard University Press.
- Ostrom, E. (1990). *Governing the Commons: the Evolution of Institutions for Collective Action*. Cambridge University Press.
- Ostrom, E. (1997). A Behavioral Approach to the Rational Choice Theory of Collective Action, *The American Political Science Review*, 92–1, 1–22.
- Ostrom, E. (2002a). Collective Action and the Evolution of Social Norms, *Journal of Economic Perspective*, 14–3, 137–158.
- Ostrom, E. (2002b). Common-pool resources and institutions: toward a revised theory. In: B. Gardner, G. Rauser (Ed.), *Handbook of Agricultural Economics*, 2, 1315–1339. Elsevier.
- Ostrom, E. (2012). Instytucje i środowisko, *Zarządzanie Publiczne*, 2, 83–99.
- Ostrom, E. (2013). *Dysponowanie wspólnymi zasobami*. Wolters Kluwer Polska.
- Prandecki, K. (2016). Dobro wspólne a zrównoważony rozwój, *Optimum. Studia Ekonomiczne*, 4, 55–68.
- Stiglitz, J.E. (2004). *Ekonomia sektora publicznego*. Wydawnictwo Naukowe PWN.
- Wołyniec, Ł.P. (2013). Zasoby przyrodnicze jako przykład dóbr typu CPR (common-pool resources), *Konteksty Społeczne*, 2, 57–64.
- Zatoń, W. (2016). Dylemat więźnia a dylematy etyczne. In: I. Czechowska (Ed.), *Etyka w relacjach instytucji finansowych z gospodarstwami domowymi* (p. 69–83). Wydawnictwo Uniwersytetu Łódzkiego.

#### Acknowledgements

**Author contributions:** authors have given an approval to the final version of the article. Author's total contribution to the manuscript: Wiktoria Błaszczkowska (34%), Damian Tomczyk (33%), Szymon Wiśniewski (33%).

**Funding:** this research was fully funded by the authors' own sources.

Appendix

**Table 1.**  
Division of goods based on the nature of consumption and excludability

	Non-rivalrous consumption	Rivalrous consumption
Difficult/Impossible exclusion	public goods	common-pool resources
Easy exclusion	club goods	private goods

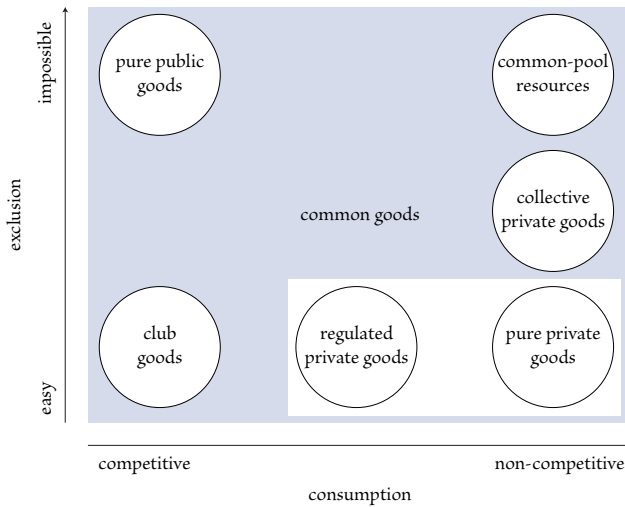
Source: Adapted from Hofmokol (2009, p. 29).

**Table 2.**  
Eight principles of self-organizing CPRs according to Elinor Ostrom

Number	Simplified content of the principle
1.	Clear definition of boundaries of the CPR and the entities involved
2.	Adjustment of appropriation and provision rules to local conditions
3.	Agreements regarding collective participation in modifying rules
4.	Arrangements for the accountability of monitoring individuals
5.	Progressive sanctions for rule violations
6.	Mechanisms for low-cost and local conflict resolution
7.	Guarantee of rights to self-organization, independent of external authorities
8.	Capability to create "nested" enterprises

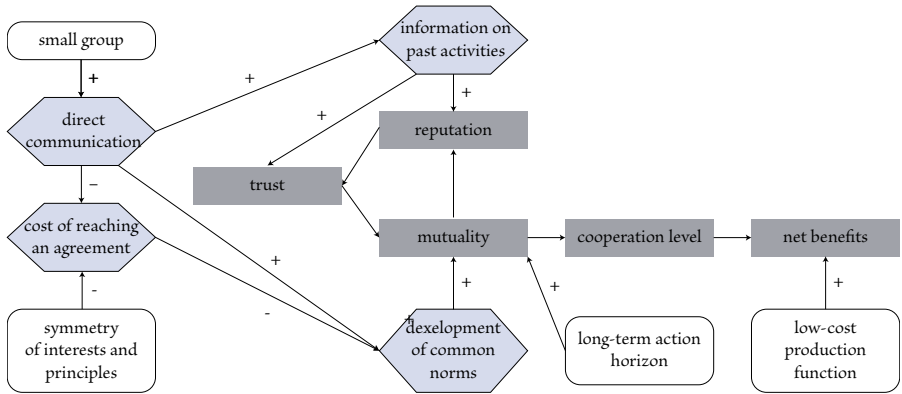
Source: Adapted from Ostrom (2013, p. 126).

**Figure 1.**  
Enhanced classification of goods based on the nature of consumption and excludability



Source: Adapted from Hofmokol (2009, p. 43).

Figure 2.  
Attributes favoring collective action according to Elinor Ostrom



Source: Adapted from Ostrom (1997, p. 15).

