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## ANALYSIS OF RONALD COASE'S THEOREM FROM THE PERSPECTIVE OF NATURAL RESOURCES MANAGEMENT

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**ABSTRACT:** The aim of this article is to consider why the Coase theorem is used so rarely in the field of environmental protection policy and why possible proposals for the implementation of this solution are exposed to harsh criticism. Ronald Coase points out the significant problem of regulatory costs, and his proposal for negotiations may be a panacea for certain over-administration, excessive interventionism, regulatory rigidity or lack of trust in the market mechanism. However, according to the author of this paper, the implementation of the Coase theorem in the most typical and significant areas and problems of environmental policy is either not possible, will encounter enormous difficulties, or is questionable from the point of view of natural resources and social welfare. The reasons for the limitations will be discussed, including undefined or imprecisely defined ownership rights to many environmental resources, the non-market nature of many environmental goods depriving them of a market price, and above all, the chronic asymmetry of the parties that would negotiate with each other on an equal basis.

**KEYWORDS:** Coase Theorem, natural resources, ecological economics

## Introduction

The so-called Coase theorem is still the subject of scientific analysis but also of intensive economics teaching. It appears in the context of analysing the functioning of the market and is treated as one of the possible and acceptable solutions to the conflict of use of the same resource by competing users and even as a tool for the internalisation of external costs. Alternative economic approaches to correcting market failures are often mentioned in the economic literature, pointing out their obvious differences, but the actual field of their applications and, above all, the key limitations that accompany them are not clearly specified.

The purpose of this paper is to consider why the Coase theorem is used so rarely in the field of environmental policy and why possible proposals for implementations of this solution are exposed to harsh criticism. The author's intention is not to discredit the theorem because Ronald Coase pointed out the significant problem of the cost of regulation, and his proposal for negotiations may be a panacea for certain administrative overreach, excessive interventionism, regulatory rigidity or lack of trust in the market mechanism. According to the author, the implementation of the Coase theorem in the most typical and significant environmental policy issues is either not possible, will encounter difficulties, or is questionable from the point of view of natural resources and social welfare.

The paper will discuss the reasons for the limitations, which include undefined or imprecisely defined ownership rights to many environmental resources, the non-market nature of many environmental goods depriving them of a market price, and, above all, the chronic information asymmetry and financial asymmetry of the parties that should negotiate with each other on an equal basis.

## Economic regulations in environmental policy

The theoretically well-described economic instruments of environmental policy, in terms of correcting the functioning of the market mechanism, belong to three very different economic concepts. All three aim to deal primarily with the inconvenience caused by the market itself and market failures. However, they are, in fact, competing proposals and even contradict each other in some way. Each concept is based on different regulatory premises and refers to a different philosophy of socio-economic policy. These three approaches can be briefly characterised as follows:

1. Fixing the market by a government institution that treats the market like a malfunctioning watch that needs to be adjusted. Market failures should be removed and the basic market defect that attracts the most attention are significant and undesirable external costs.
2. Parties interested in the same resource, i.e. economic entities involved in the problem, are able to determine among themselves a solution that will be beneficial to them and optimal for the economy. Interference by a government institution is excluded in advance.
3. The third approach draws attention to the specificity of environmental goods, which means that the market cannot be relied on as the only allocation mechanism and therefore trading in rights/permits to use a natural resource becomes possible only after defining the quantitative limits of permissible intervention in the natural environment.

The first solution published in 1920 is traditionally associated with the name of the British economist Cecil Pigou and his concept of justified external interference in the functioning of the market (Pigou, 1932). Due to the occurrence of external costs, the market makes suboptimal allocation, which is accompanied by a deadweight welfare loss. The relevant state authorities can not remain inactive. The desired internalisation of an external cost should be achieved with the help of a tax, which is traditionally called the Pigouvian tax. The tax is charged to the account of the person harming the environment, thereby depriving him of the benefit obtained as a result of passing on his own costs to others. The practical application of Pigou's tax encounters numerous difficulties. In the real economy, we do not observe the textbook-like internalisation of external costs. The "Polluter Pays Principle" is implemented to a limited extent, most often in the form of the pragmatic "polluters pay" principle. This means that the calculated tax rate usually does not directly take into account the marginal external cost caused by particular pollution of the individual emitter.

We used to associate the second approach with the name of the American economist and Nobel Prize winner Ronald Coase (Jastrzębski & Mroczek, 2014). The Coase Theorem (Coase Theorem – CT)

has long been an obvious component of economics and university microeconomics classes, which explain one of the ways of dealing with decision-making by economic entities (Derkacz, 2020). The key publications were published in the early 1960s and have been reprinted many times (Coase, 1960; Coase, 1990). CT is the use of negotiations to allocate resources without external and institutional interference. It can be said that the interventionism of a government institution is replaced by trust in market mechanisms that can decide on the use of a certain good or resource through negotiations. Of course, negotiations should take place between parties who are perfectly aware of the costs and benefits related to the use of their part of the good or resource. Cost-benefit analysis shows all users what is really profitable for them. Coase claims that when negotiating, both parties will maximise their sum of net benefits and reach an agreement, thus implementing a solution that benefits everyone.

The third approach requires obtaining basic data from natural or medical sciences. Intervention in nature related to the use of a natural resource (pollution, extraction, harvesting, etc.) must have clearly defined limits. They may result from analysing the impact-effect relationship, with particular attention to harmful or undesirable effects. As a result, the limits of interference are established. These may include fishing quotas for specific fish species that will not cause overfishing and will enable the regeneration of this renewable resource. These may be amounts of greenhouse gases emitted that will not cause rapid and dangerous climate changes. The established size of safe interference with the environment allows for the issuance of permits that can be given away or auctioned and then left to the reallocation taking place on the market of permits. The key element in this third approach is to separate the decision on the scope of intervention in the environment from the decision on granting the right to use this environment (Daly, 2007). All permits together do not exceed the limits of safe use of the environment. This means, in fact, a lack of trust, *a priori*, in the market as an automatic allocation mechanism when it comes to natural resources that we want to preserve or protect against over-exploitation.

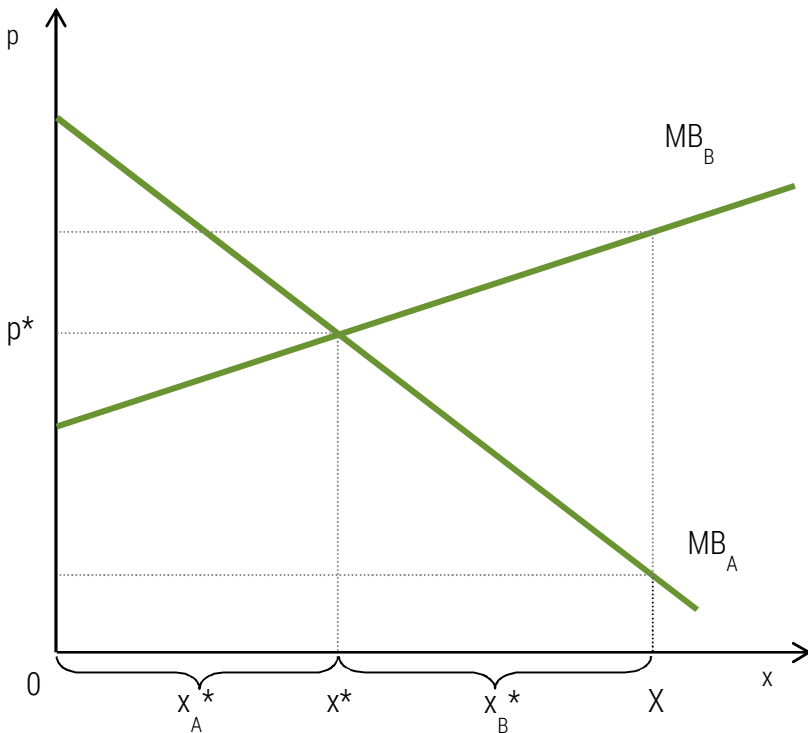
### **Analysis of the Coase theorem**

The probable origin of CT is very symptomatic. According to sources that are difficult to verify, the idea appeared in specific circumstances. The professor was asked to comment on the administrative decision related to the allocation of radio frequencies to supposed broadcasters. As you can easily guess, the official did not bother with economic criteria and made the division according to his own without too large disproportions to avoid being accused of bias. Referring to the already mentioned diversity of approaches to regulation, it is worth pointing out the basic controversy that must have motivated Coase to demonstrate the creative role of the market: whether the use of a certain resource must be decided by an official, or perhaps it should be an analysis of costs and benefits so important for participants of a competitive market? (Coase, 1994a; Coase, 1994b).

The professor proposed an alternative to the official decision to allocate radio signal emission bands to broadcasters. The initial allocation could be subject to bilateral negotiations between interested users. What did he expect? Information about the possibility of changing the allocation sparked the interest of broadcasters, as they now focused on the costs and benefits of transmitting on different frequencies. They analysed various variants, and their economic result was strongly related to income from advertising and contracts with show business representatives. Certainly, the calculation outcome was different for different entities and generated three basic groups of broadcasters: 1) the first group willing to increase the broadcasting frequencies, 2) the second group satisfied with the allocated frequencies, 3) the third group interested in reselling part of the allocated broadcasting frequencies.

Representatives of the first and third groups should enter into negotiations with each other. The basis and core of the negotiations will be the fact that one of the entities, by reselling a certain part of the band, could earn more than if they continued broadcasting under the old rules. In turn, another entity could buy back part of the transmission band, hoping that the payment will be exceeded by the income obtained thanks to its increase in frequencies. This type of transaction would be possible if the law did not prohibit it. The result of such transactions, in model terms, would be the optimal division of the used resource. In the example presented, this would be a division of available radio

frequencies that would provide all radio stations with the highest supposed income. The problem can be simply described when there are only two competitors for the same resource (Figure 1).



p – price  
 x – resource quantity  
 MB<sub>A</sub> – Marginal Benefit of user A  
 MB<sub>B</sub> – Marginal Benefit of user B

Figure 1. Graphical interpretation of the Coase Theorem

Source: author’s work based on Żylicz (2004).

The size of the resource  $X$  is determined and has been pre-divided between two users marked as  $A$  and  $B$ :  $X = x_A + x_B$ . This is the first hand, after which both sides are willing to enter into effective negotiations. CT defines negotiation as iteratively achieved agreement on a common position. Mathematically, this is an optimisation problem for two users. It can be written formally, assuming that  $B_A$  means the total benefit of user  $A$ , while  $B_B$  means the total benefit of user  $B$  (Żylicz, 2004):  $\max\{B_A(x_A) + B_B(x_B): x_A + x_B = X\} = B_A(x_A^*) + B_B(x_B^*)$ .

The result of model negotiations is the optimal division of the resource into two parts,  $x_A^*$  and  $x_B^*$ , which maximises the sum of the benefits of both parties, i.e.  $B_A(x_A^*) + B_B(x_B^*)$ . The sum of benefits is represented in the figure as the sum of the corresponding two fields under each of the marginal benefit lines ( $MB_A$  and  $MB_B$ ) when user  $A$  owns the resource from  $0$  to  $x^*$  and user  $B$  owns the resource from  $X$  to  $x^*$ . It is easy to check that each shift of the division point  $x^*$  to the left or right will result in the sum of benefits being reduced.

When commenting on the figure, it should be noted that the result of the negotiation will be exactly the same regardless of the initial allocation of the resource. This means that any chosen primary distribution point will tend to achieve the same equilibrium point of marginal benefits for both parties. Additional commentary on the optimal solution expands the scope of interpretation. Up to this point, there is a tacit assumption that the initial state of ownership does not affect the course of  $MB_i$  lines for users  $A$  and  $B$ . If the initial state of possession determines the location of  $MB_i$ , then point  $x^*$  and the exchange price  $p^*$  will still be determined as a result of negotiations anyway as the optimal solution at the intersection of both  $MB_i$ . However, this new intersection point does not then have to coincide with the location  $x^*$  marked in the figure.

In the model example, the result of negotiation is achieving the optimal resource allocation. Optimality concerns maximising the sum of benefits obtained. Moreover, the allocation will be effective in the sense of the Pareto optimum because it is impossible to propose a change, i.e. a different allocation, which, while improving the situation of one party, would not worsen the situation of the other. This can be supplemented with the comment that if one of the parties enters into negotiations because of the burdensomeness of certain costs (including external costs), the problem will be eliminated as a result of negotiations in a two-person market. The negative effects may even remain physical, but they will no longer be external costs, *ex definition* because they will be paid/compensated by the other party. However, the reasoning carried out up to this point assumes that all the preliminary conditions that are necessary for the proper functioning of CT will always be met. Now, assumptions need to be listed and analysed.

The CT model seems to be an efficient and excellent mechanism for solving a conflict situation when legally established property rights exist, and rigid regulations block entrepreneurship (Pomaskow, 2016). A simple economic calculation indicates a real possibility of improving the situation of both interested parties. However, it turns out, as Coase himself mentioned very clearly, that smooth and optimal allocation can only be considered after meeting many formal assumptions.

These assumptions of CT are important and require comment in the context of the real economy and, above all, in relation to natural resources. In the next part of this paper, the key assumptions, actually the first ones mentioned in the list below, will be the subject of analysis. The basic assumptions of CT are usually explained as follows:

- the legal right to use the resource has been precisely and clearly defined,
- transaction costs are zero or negligible,
- negotiators are characterised by rationality postulated in the model of perfect competition,
- the negotiating parties maintain symmetry of competencies, knowledge and bargaining power,
- the redistribution of benefits that occurs as a result of the negotiations does not immediately change the assessment of the marginal benefits of the negotiation participants,
- the negotiation process takes place only between interested parties,
- the result of the negotiations is not corrected by an external institution or state,
- the negotiation itself is not questioned by law and administrative regulations,
- an external authority ensures the enforcement of concluded contracts.

## Critical interpretation of the Coase theorem assumptions

### Precise and unambiguous definition of ownership and disposal of the resource

This basic assumption would be relatively easy to confirm in the economies of highly developed countries with an appropriately developed and functioning legal system. Man-made goods, resources, and capital usually have a clearly defined owner with the right to dispose of the property. However, problems arise and increase when moving from man-made to environmental goods.

In fact, the assumptions of CT can rarely be met in the case of environmental goods and resources (Calabresi & Melamed, 1972). Most of the key natural environmental resources are goods of open, unlimited access, without a specific ownership status and exposed to robbery. Let's take the biosphere with its various values as an example. Moreover, many important natural resources are public goods, "club" goods, rationed goods, or goods with limited and top-down (outside the market) regulated access.

In the case of the natural environment, we encounter ownership categories that make it impossible or even impossible to identify the owner (Armstrong, 2017). Natural capital includes global public goods (like climate), public goods with free access for everyone (like fish swimming in the ocean), and smaller-scale public goods (like clean air in the city centre). Within natural capital, we encounter club goods (such as areas reserved for a certain part of the population) and common goods, which Hardin (1968) considered in detail. Common goods are owned by a certain group, but they rarely have a common interest and a common plan for rational treatment of the resource.

The minerals hidden under the ice of Antarctica, due to the status of this continent, have not yet been allocated to anyone and are not anyone's property. A separate problem is the unclear legal status of many goods and natural resources in developing countries, where property regulations are

imperfect or do not function at all (Heltberg, 2002). All these examples do not fit into a simple scheme in which the owner and disposer of the property can be easily identified. Thus, a huge part of natural resources does not meet the first and key condition of CT.

### Transaction costs are zero or negligible

Reluctant to manual control of economic entities in a market economy, Coase emphasised the high transaction costs associated with it. He pointed out that there is no need to use economic instruments to force the optimal level of pollution because achieving it is in the interest of both parties, and any institutional regulation must entail high costs of preparation, implementation, administration and thus an increase in the cost of the entire regulation.

Are transaction costs irrelevant in negotiations? Considering examples from the market economy, it could be stated that even without negotiations, business entities are forced to participate in market competition to recognise and calculate the costs and benefits of their activities depending on the entire range of market factors, which include global and domestic economic situation, the value of assets held, the behaviour of competitors on the market, changing consumer preferences, technical and organisational innovations, etc. Ronald Coase was aware that the assumption of zero transaction costs is unrealistic. He also studied the course of negotiations, assuming that transaction costs were significant (Coase, 1990). However, according to the CT, only high transaction costs could lead to the conclusion that the negotiations would be economically unjustified and would never take place.

As in the case of the first assumption, referring to the example of natural resources leads to obvious controversy (Gowdy & Erickson, 2005). If we take into account only those natural resources that have a specific owner, then in his hands, there will also be non-market goods and resources without a price that determines their inclusion in the economic calculation. Moreover, they may be resources whose impact on the environment together with people can be characterised in the form of positive external effects (e.g., ecosystem services). The private owner of the resource will have neither the ability nor the motivation to precisely quantify the monetary benefits of that resource. It will be even difficult to value his own non-market benefits. Therefore, he certainly will never value social benefits unless he can capitalise on them (Krutilla & Fisher, 1975). It should be added here that economic valuation, so popular in the academic community and ecological economics publications, is not a common, easy and cheap tool for obtaining knowledge about the monetary benefits of environmental goods and resources.

### Negotiators are rational

The discussion with this assumption is as old as the theory of limited rationality of economic agents. It is well known that irrational behaviour or behaviour far from model rationality will occur. With this knowledge supported by statistical material, it would be possible to continue to study the results of negotiations taking place in a market economy. The problem is that natural goods and resources require a different type of knowledge than that generated by the experience of the producer and consumer within the regular patterns of conventional markets.

Economic rationality, limited anyway, will meet here with a lack of qualified knowledge about presumed costs and benefits resulting from the environment. The limited rationality of an economic entity does not sound as dangerous as ignorance regarding phenomena such as the negative impact on the environment resulting from pollutant emissions, careless exploitation of non-renewable resources, or unconsciously lost benefits due to decreasing biodiversity. Of course, in such circumstances, the greatest misfortunes should be expected wherever a resource in private hands generates environmental damages and high social costs. Negative externalities, if they are collective/public, will likely simply be overlooked or ignored by the private owner.

Let us consider two cases and their consequences because individual rationality does not equal rationality from the point of view of society. Case one: A privately negotiated division of a natural resource may result in the loss of some meaningful ecosystem services from that resource. Case two: one party in bad faith willingly accepts incorrectly estimated benefits or costs of the other party resulting from information asymmetry (e.g., underpaid wages proposed by the employer and accepted by the employee due to her/his ignorance in the case of work in conditions harmful to health). In the examples mentioned, both sides will consider only private benefits and do not take into account the



social consequences. Examples of consequences include, in the first case, reduced benefits or scarcity of biological resources burdening future generations. In the second case, private health damage will also result in state medical expenses because the injured party will try to pass on at least part of the costs to the state.

### The negotiating parties are equal negotiation partners

This assumption is very often unfulfilled, regardless of whether the goods and resources are anthropogenic or come directly from nature. Controversy is related to the acceptance of the negotiation result, which usually depends on the awareness, information, knowledge, competencies, bargaining power and financial situation of the negotiating parties (Tipler, 2007). The phenomenon of asymmetry occurs naturally in many market transactions, but it has significant consequences when the outcome of negotiations may create negative consequences for society. The asymmetry with the most significant consequences usually concerns access to information and the financial strength of the negotiating entities. Both factors are most pronounced when we consider that two completely different economic entities act thinking about the benefits and costs of exploiting the same natural resource.

The most questionable point of Coase's theoretical analysis is the assumption that both negotiating parties have perfect knowledge of the economic parameters of environmental exploitation and the associated losses. This defect is also related to the questionable assumption of equal bargaining power on both sides of the conflict. In practice, those affected by negative pressure on the environment are usually the weaker party. This is because of the difficulties associated with organizing and forming an interest group, obtaining basic knowledge about one's own costs and benefits, as well as due to limited mobility and the lack of an alternative solution.

The weaker position of the injured party also results from the fact that the benefits obtained as a result of negotiations will, in fact, be avoided costs. If the victims are unable to monetise these benefits, where would they get the financial resources to "bribe" the emitter to reduce the negative impact? A convincing example is that of residents bothered by noise from a nearby airport, who would certainly be more comfortable if the noise were reduced, but they will not quickly turn this benefit into a monetary advantage (the argument of higher housing prices due to a quieter neighbourhood is acceptable, but only in the long term). In most cases, the affected party meets a great financial power (e.g., the airport company) on the other side of the barricade, which means that only this rich opponent can easily "bribe" and also has easy access to information and professional legal assistance.

### A supplement to the Coase theorem

A critical analysis from the point of view of ecological economics does not exclude the identification of interesting and inspiring threads of thought proposed by CT (Tipler, 2007). According to CT, negotiations between "perpetrators" and "victims" (the quotation marks are entirely in the spirit of Coase's interpretation) are an economically efficient way of making changes in the use of resources (Coase, 1960). Formal analysis indicates that regardless of the initial allocation of the right to use the environment, its optimal level may be the result of a tender by both interested parties. If the law limits the emission of pollutants into the environment, the flow of money from "perpetrators" to "victims" could compensate for their external costs and encourage victims to accept the consequences of environmental deterioration. On the other hand, if the law is liberal towards environmental pollution, the flow of money from "victims" to "perpetrators" compensating for lost income would be able to convince issuers to limit harmful activities and prevent undesirable changes in the environment. Optimality, therefore, seems to ignore pointing out the "guilty" and is satisfied with the best possible outcome of the negotiations.

In fact, non-institutionalized "bribery" plays a similar role to a subsidy in both situations and has a similar effect to tax. If we ignore moral judgments and the common understanding of justice in case of harmful emissions, Coase's mechanism of optimising the use of the environment seems to be ideal. Examples cited in the literature, including a model conflict between residents of a housing estate exposed to noise and the owners of a nearby airport, show that bribing, in this case, noise victims or airport authorities, can be equally justified and effective. The direction of payment flow will be deter-

mined by the right to emit noise or, more precisely, by the implemented noise standard. In certain specific situations, regulations regarding the use of environmental resources and liability for damage actually turn out to be less effective and more costly compared to bilateral arrangements establishing the allocation of resources through negotiations (Coase, 1960; Krutilla & Fisher, 1975).

Blurring the line between those who harm and those who are harmed may take a special form when the buyers of cheap apartments near a noisy airport will actively influence the original allocation of the right to make noise and, with the help of a larger group of supporters, will modify the noise standards and finally also the original allocation. Tightening the permissible noise standards, moving the runway away, or building anti-noise screens with public funds are bonuses for tenants, and these are now connected to the bargain flats that were once purchased. The market price of soundproofed apartments will be higher in the real estate market, and clever tenants in this story are rather “free riders” than victims of a noisy airport.

The above comments do not eliminate the doubts that the result of the negotiations can maintain the current harmful impact on the environment. Bribing the injured means compensating them for the external costs they incur, which, however, seems highly questionable in a situation of real threat to health or life. Moreover, the argument of harming the full society, and not just the second negotiator, may be here. It should be noted again that the result of the negotiations is solely the result of a bilateral tender, the course of which is determined by the profitability of competing types of environmental use and the cost of abandoning them (Kosters, 1972). Nevertheless, social considerations and future consequences are not taken into account at all.

CT is a competitive approach to the solution proposed by Pigou (Daly, 1974). It is a theoretically described possibility of achieving an optimal level of pollution as a result of bilateral negotiations between users of the same resource. However, attention has already been drawn to Coase’s failure to clearly distinguish between pests and victims bearing the consequences of their actions (Tipler, 2007). Coase’s indifference to environmental protection goes even further. He claims that by registering his demand for “dirty” products, the consumer becomes, in a way “complicit” in the fact that the manufacturer starts producing these products. It can also be argued, in the spirit of the idea of Coase, that the same person as an entrepreneur is also the perpetrator of pollution and then, as a citizen, bears the consequences of a harmful impact on the environment (Tipler, 2007). As a result, Coase even stated that there were insufficient grounds for granting selected people the right to use the environment and, at the same time, discriminating against producers polluting the environment. You can argue with this sophistry passionately, but you are left with a sad reflection on unconscious or conscious participation and agency.

## Conclusions

Case’s Theorem shows theoretically that in certain situations, negotiations may be a solution as optimal as the Pigouvian tax. Negotiating entities maximise their private benefits, which would be good for society and seems consistent with the purpose of Pigouvian tax regulation. However, the allocation of goods and natural resources made as a result of such negotiations at best optimises private benefits obtained in the short term. CT takes into account the welfare of the private parties negotiating with each other and does not consider the social consequences of the allocation. In fact, private negotiations do not have to and do not take into account the long-term interests of society – neither the present generation nor the needs of future generations. Especially in the case of natural goods and resources, the negative consequences of arbitrary decisions taken by private owners may prove significant.

Properly used Pigouvian tax or tradeable permits can contribute to sustainability. This is a reference to the concept of sustainable development, which is about harmonious development in three spheres: economic, social and environmental. Economically motivated sustainability, understood as the preservation of capital or prosperity, at least at the current level, is not the subject of CT (Perrings, 2008). The sustainability of the natural environment and its resources may be threatened as a result of too much trust in positive economics, including applied CT, and thus the promotion of solutions distant from normative ecological economics (Śleszyński, 2022). Also, the durability and cohesion of the social system, considered from the point of view of justice and equality, will often be violated as



a result of negotiations consistent with Coase's law. In the context of both environmental and social consequences, non-compliance with the concept of sustainable development is intertwined with ethical doubts.

Coase's law is a good pretext for deeper reflection on the supposedly optimal solutions proposed in economic theory (Śleszyński, 2021). The science of economics recognises the limited rationality of economic entities and takes it into account in the analyses of market mechanisms, but it is accompanied by tacit consent to the negative social consequences of decisions made in such circumstances. This happens primarily in the case of non-market goods and transactions not recorded by the market. In environmental protection and natural resource management, the social context should dominate over the private one. Therefore, there is a need for the intervention of an external institution in the interest of society, limiting the freedom of the market; an intervention preceded, however, by a thorough analysis of the causes of the emergence and significance of the disclosed external costs.

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## ANALIZA TWIERDZENIA COASE'A Z UWZGLĘDNIENIEM GOSPODAROWANIA ZASOBAMI NATURALNYMI

**STRESZCZENIE:** Celem tego artykułu jest przeanalizowanie dlaczego twierdzenie Coase'a w dziedzinie polityki ochrony środowiska stosowane jest tak rzadko, a ewentualne propozycje zastosowań i wdrożenia tego rozwiązania narażone są na ostre zarzuty. Ronald Coase wskazuje istotny problem kosztów regulacji i jego propozycja negocjacji może być panaceum na pewne przerosty administracji, nadmierny interwencjonizm, sztywność regulacji lub brak zaufania do mechanizmu rynkowego. Jednak zdaniem autora artykułu implementacja twierdzenia Coase'a w najbardziej typowych i znaczących obszarach i problemach polityki ochrony środowiska albo nie jest możliwa, albo napotka na ogromne trudności, albo jest wątpliwa z punktu widzenia zasobów naturalnych i dobrobytu społecznego. Przedyskutowane zostaną przyczyny ograniczeń, do których należą: nieokreślone lub nieprecyzyjnie określone prawo własności wielu zasobów środowiska, nierynkowy charakter wielu dóbr środowiska pozbawiający je ceny rynkowej, a przede wszystkim chroniczna asymetria informacyjna i finansowa stron, które miałyby ze sobą równorzędnie negocjować.

**SŁOWA KLUCZOWE:** twierdzenie Coase'a, zasoby naturalne, ekonomia ekologiczna