



Costs of a fourth treatment stage in wastewater treatment plants and financing based on the polluter pays principle

Economic instruments for the reduction of medicinal product residues

ABSTRACT

A study by Civity Management consultants produced on behalf of BDEW

Executive Summary

Currently, the introduction of a fourth treatment stage throughout Europe is being discussed, with the objective of reducing the input of medicinal product residues into waters. The associated costs will be around €1.2 billion/year in Germany and around €6.5 billion/year in Europe. In Germany, this will lead to total costs over 30 years of around €36 billion.

The fourth treatment stage is not effective as an end-of-pipe solution. There is no technical process in which all micropollutants are broken down.

The fourth treatment stage has varying degrees of efficacy in relation to different pharmaceutical residues (no process successfully breaks down all micropollutants), however it generates high overall costs of the process. It is questionable whether the unimpeded input of pollutants and a downstream treatment by way of a fourth treatment stage makes sense from an economic perspective. The high total costs of the process, the low efficacy in some areas and a consideration of other viable solutions along the supply chain lead to the conclusion that an end-of-pipe solution is not appropriate. Instead, a holistic approach should be sought, all parties involved should be held accountable and incentives to reduce the input of pollutants should be introduced.

The financing of a fourth treatment stage via wastewater fees fails to observe the polluter pays principle and does not provide any incentive to reduce the input of medicinal product

residues into the environment.

If the introduction of the fourth treatment stage is nevertheless implemented, the polluter pays principle as well as the incentive function should be taken into account when choosing the financing method. Financing the costs of €1.2 billion/year through wastewater fees leads to an additional burden of around €15.20 per fee payer per year. On average, the wastewater fees for a four-person household in Germany would increase by €60.80. While this means an average increase in the fees of 14 per cent, it could, in some German Länder, such as Bavaria, be as high as 17 per cent. As these figures are average values, the increases in fees could be even higher than that in certain cases. The financing via wastewater fee payers would not offer any prevention incentive, yet it would lead to a sharp increase in the input of medicinal product residues into waters. Environmentally harmful waste would, in a similar way to disposal via landfill, not be appropriately disposed of. Remedying the negative environmental impact would have to be financed by society as a whole, without any associated incentive for those responsible to reduce inputs.

Financing the costs through a pharmaceuticals levy does adhere to the polluter pays principle and leads to a minor burden per medicinal product.

Alternatively, financing could be based on a pharmaceuticals levy imposed on the manufacturers, for example; the costs of €1.2 billion/year correspond to a levy of around 2.5 cents/DDD (daily defined dose) on prescription drugs in Germany. Applied to a medicinal product taken, for example, over a period of 30 days, this leads to a comparably low additional burden of €0.75. Financing via the

medicinal products adheres to the polluter pays principle and distributes the costs across all parties involved (manufacturers, retailers, pharmacies, health insurance providers and where applicable patients). This solution is ecologically and economically beneficial because it contributes to reducing the input of pollutants overall and keeps the total costs of the process low. Moreover, the average additional financial burden on the medicinal products, in the amount of 2.5 cents/DDD, is comparably low.

Financing the costs through a fund solution combines adherence to the polluter pays principle with the lowest administrative cost.

A third possible financing option is to use a fund solution on the basis of an agreement with the pharmaceutical industry. Adherence to the polluter pays principle is ensured through the structure of the contributors to the fund, for example contributions can be allocated according to the environmental impact of the individual medicinal

products. Moreover, there is an incentive effect towards preventing the input of pollutants. This solution entails a milder regulatory intervention and a smaller administrative cost than the pharmaceuticals levy. One drawback, however, would be the lack of a legally binding obligation.

Reducing the input of pollutants through preventive measures is the most effective solution.

In conclusion, the following should be noted: The most effective approach is to reduce the input of pollutants and implement preventive measures. Where this is not possible, it should at least be ensured that the party responsible is held accountable and bears the costs. A prevention strategy can only be effective if the manufacturers are included in the respective financing. An incentive to reduce inputs must be created and this is only possible through a pharmaceuticals levy.

BACKGROUND

Residues of medicinal products, a key category of man-made trace elements, are today already finding their way into waters. Going forward, a sharp increase is to be expected, the reasons being demographic change and a rise in the use of medicinal products per-head.

In light of that, the findings of a civity study from 2017 make the case for a holistic approach involving all players in the consumption chain for medicinal products in order to initiate the prevention of inputs of medicinal products into the aquatic environment. First and foremost, manufacturers of categories of substances which appear as trace elements in the environment are responsible for preventing/reducing their input into waters and bearing the associated costs. However, prevention strategies must also be developed

for doctors' practices, pharmacies and right up to end consumers with measures taken to reduce the inputs of medicinal products. In addition to the reintroduction of a nationwide take-back system by pharmacies, consumers must also be encouraged to dispose of old medicines appropriately. Moreover, as far as the approval and monitoring of old and new medicinal products are concerned, the principle of environmental sustainability must also be stipulated as a relevant criterion.

Last but not least, agriculture can also make an important contribution to the reduction of inputs of medicinal products. Specific starting points in this respect are lowering the use of veterinary medicinal products and reducing the spreading of manure on agricultural land.

FOURTH TREATMENT STAGE

 Background

- › An ever-increasing use of pharmaceutical drugs as well as continuing demographic changes are causing a rise in the inputs of pollutants into waters; in order to counteract this development, the introduction of a fourth treatment stage in wastewater treatment plants in size classes 3-5 is currently being discussed.

Costs

**In Germany:**

- › €1.2 bn/year or €15.20/person/year
- › Fee increase on average of 14 per cent, in some cases up to 17 per cent
- › €36 bn in 30 years

**In Europe:**

- › €6.5 bn/year



Financing by way of wastewater fees

**Benefit:** Simple to implement**Disadvantage:** Does not adhere to polluter pays principle, no incentive to reduce input of pollutants, lopsided burden on society

Financing by way of pharmaceuticals levy

**Benefit:** Adheres to polluter pays principle, incentive function, incentive to reduce input of pollutants, low specific costs (2.5 cents/DDD)**Disadvantage:** Difficult to implement, requires political support

Financing by way of fund-based solution

**Benefit:** Adheres to polluter pays principle, lowest level of interference; lowest administrative cost**Disadvantage:** Lack of legally binding obligation

Criticism

- › The fourth treatment stage does not provide any incentive to prevent the input of pollutants and has a false signalling effect towards manufacturers; moreover, the measures are very expensive, not effective and do not guarantee complete elimination of pollutants



Alternatives

- › As an alternative to the introduction of a fourth treatment stage (end-of-pipe solution), all parties involved in the supply chain should be included, thus providing incentives to prevent the input of pollutants