

Challenges of Urban Areas for Land Use, Co2 Emissions and Climate-Resilience: The Role and Environmental Reform of Local Taxes and Charges

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Abstract:

Urban areas present specific challenges for land use, CO2 emissions, climate change and other environmental effects. Municipalities have specific responsibilities in such areas, including limited taxing powers.

Spanish local taxes provide tax incentives on clean energy to be implemented by local authorities. However, current regulation is mainly limited to solar energy and recharging points for electric vehicles. Furthermore, the rules are scarce and do not provide enough guidance on designing local ordinances (particularly regarding clean vehicles). This paper proposes reforms to improve the environmental goals.

We also suggest a reform of the circulation tax to turn it into a proper environmental instrument; moreover, our paper analyses proposals to replace the tax on economic activities by a tax on polluting activities and to supersede the tax on construction works by a levy on the environmental impact of such works. We also discuss how to introduce new local taxes related to carbon emissions of immovable property.

To finish with, the Spanish Act on Waste and Contaminated Soil (2021) gives local entities a three-year deadline to turn current waste charges into environmental instruments to grant a circular economy. This reform implies covering the total cost of the services and implementing pay-as-you-throw systems. We approach how to implement such reform.

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<a> TAX CREDITS ON LOCAL TAXES TO PROMOTE CLEAN ENERGY

Municipal authorities may implement local environmental tax credits through local ordinances within the boundaries of the Local Finances Act.¹

We can distinguish credits applicable to multiple local taxes (tax on immovable property, tax on public works, tax on economic activities with certain peculiarities on each one) and others specific to some taxes (tax on economic activities and circulation tax).

There is no environmental benefit regarding the tax on the increase in the value of the land of urban nature.

We find a peculiar tax credit potentially applicable to any local tax (except for the circulation tax and the tax on the increase in the value of the land of urban nature).

It may amount to 95 per cent of the tax due regarding economic activities declared by the city council as of particular interest for social, cultural, historical-artistical, or related to the promotion of employment.

On the one hand, the provisions do not explicitly mention environmental reasons, but we should stress the social impact of environmental improvements.²

On the other hand, the city council would grant the tax credit to an individual taxpayer for a specific project. Therefore, the tax expenditure risks being an illegal State aid.³

Regarding the taxes on immovable property, public works and economic activities, the city council may grant a tax credit of up to 50 per cent of the tax due, provided that the taxpayer installs recharging points for electric vehicles.

City councils may introduce a tax credit of up to 50 per cent of the tax due in the taxes on immovable property and public works when the taxpayer installs solar energy facilities. Local authorities can also grant a tax credit of up to 50 per cent in the tax on economic activities. In this case, the scope is broader: it is not limited to solar energy but includes facilities for using all renewable energies and cogeneration.

We must criticise that the tax benefits of the tax on immovable property and public works are limited to solar energy facilities (except for some Basque municipalities).⁴ Some municipalities go further and include other renewables and thermal insulation installations. Such local ordinances are good for the environment but could be declared illegal. A legal reform is advisable.

Local councils may also introduce two other tax credits specific to the tax on economic activities regarding (a) the start-up or relocation of activities to areas away from the population centre and (b) establishing a transport plan for workers that reduces energy consumption and emissions.

We also find specific tax credits in the circulation tax. We shall deal with them in the next heading.

<a>TAXATION ON VEHICLES

Environmental tax incentives and harmful tax competition

Royal Legislative Decree 2/2004, of 5 March, which approves the Consolidated Text of the Act on Local Finances, regulates the circulation tax in articles 92 to 99. It is a direct tax levied on the ownership of motor vehicles when defining their taxable event (article 92.1). Therefore, we are in the presence of a tax levied without a direct connection to the provision of public services.⁵

The object of the tax is the ownership of motor vehicles suitable for driving on public roads insofar as the ownership of this type of vehicle is indicative of economic capacity. Therefore, it is a wealth tax levied on specific assets (motor vehicles).⁶

Although the tax has mainly fiscal purposes (to obtain resources to finance local spending), municipalities can introduce tax credits for vehicles that use less polluting fuels or engines. There

have been proposals to replace them with a new regulation based on the environmental impact of the vehicles.⁷

The Act on Local Finances grants municipalities the power to introduce a multiplier factor to the legal tax rates and regulate environmental tax incentives by local ordinances. The combination of these two elements (tax credits and multiplier factor) opens the possibility to promote "vehicle relocations" for tax reasons.

The problem is that this generates harmful tax competition. This competition will typically occur between a large city and a small municipality in its geographical surroundings.

Small municipalities, with much lower financing needs than large cities, can establish the multiplier factor at the minimum authorised by law without affecting their financial situation. In contrast, a more populated municipality with a large fleet of vehicles and in which road traffic also generates multiple problems that the municipal services must deal with may need to set its multiplier factor at levels close to the maximum limit the law allows. Such tax incentives will encourage large taxpayers of the tax (e.g., companies that have large fleets of vehicles, such as vehicle rental companies or transportation companies) to relocate their vehicles to a small municipality with a lower tax burden.

Furthermore, the current legal configuration of environmental tax incentives offers the main risk of harmful tax competition. The Act on Local Finances allows municipalities to establish a tax credit of up to 75 per cent of the tax due, considering the environmental impact of two factors: the fuel used by the vehicle and the characteristics of its engine. Article 95 leaves a wide margin to the municipalities for the establishment and configuration of this incentive, and, in this sense, it is necessary to consider the difficulty to specify which vehicles can enjoy it since the factors mentioned in article 95 of the Act on Local Finances do not appear, as such, in the technical specifications of the vehicles. Moreover, there are certain elements that, in principle, should not be relevant to granting the credit, such as the vehicle using unleaded gasoline or a catalytic converter. The reason is that since 1993, all new motor vehicles have included a catalytic converter, and as is known, these vehicles necessarily use unleaded

gasoline. However, this element could be relevant to incentivise replacing old cars (without a catalytic converter) for newer ones.

The combination, on the one hand of the application of the minimum multiplier factor and, on the other hand, of a broad environmental tax credit, will generate a sufficiently attractive tax advantage for taxpayers to promote the location of their vehicles in certain municipalities that we can classify as "tax havens for vehicles".

Proposals for an environmental reform

There is a consensus on reforming the Circulation tax to enhance its environmental nature¹. In recent years, official Committees have issued proposals for the reform of the tax system (including the circulation tax). However, the Government has not implemented their recommendations.

Regarding the circulation tax, the Commission of Experts for the reform of the Spanish tax system, in its Report published in February 2014, advised the reform of both the Circulation tax and the Special Tax on Certain Means of Transport, creating a single tax of environmental nature, called "Tax on the Use of Motor Vehicles". The tax due would depend on each vehicle's theoretical carbon dioxide emissions. To this end, the tax should be lower when the vehicle is subject to modifications that reduce emissions. Given the environmental purpose of this new tax, it should be regulated by the central parliament and would be the same for all Autonomous Communities and municipalities. It should be audited and collected by municipalities, and its tax revenue should be shared among municipalities and Autonomous Communities.⁸

In 2017 a new Commission of Experts prepared a report to reform the local financing system. It recommended the introduction of two magnitudes to assess the circulation tax: the price of the vehicle (according to the ability to pay principle) and the CO₂ emissions, based on the polluter pays principle.⁹

Finally, the White Paper on the Tax Reform, published on 3 March 2022, considers several proposals for tax environmental externalities associated with transport and grants that Spain will comply with its

environmental commitments.¹⁰ Regarding the circulation tax, the White Paper proposes an additional charge based on the vehicle's CO2 emissions from the vehicles. This charge would increase the current tax revenue. To avoid the regressive impacts that the reform may have, the White Paper considers introducing subsidies for the renewal of the fleet of vehicles for those households with a lower income level. The subsidies would "accelerate the transition to a decarbonised transport sector and limit in the medium and long term the adverse distributional effects of tax proposals in the field of automotive fuels".

In addition, the White Paper addresses the problem of traffic congestion and pollution in large cities, proposing introducing a new municipal tax on congestion in certain cities, attending to the traffic volume and the location and time.

The common denominator of all these proposals, with which we fully agree, is to modulate circulation tax based on the pollution produced by vehicles, to turn this tax into an instrument to fight against pollution and climate change.

<a>TAX ON ECONOMIC ACTIVITIES

The tax on economic activities does not levy the profits but the mere pursuit of economic activities. Entities with a turnover of less than one million euros and all individuals are tax-exempt.

As we have seen, municipalities may introduce several environmental incentives. However, they play a minor role, and, at the same time, it is dubious that the tax complies with the ability to pay principle (Article 31.1 of the Spanish Constitution).

Therefore, there have been valuable proposals to suppress the tax and replace it with a tax on the environmental impact of economic activities.¹¹

The main problem would be selecting the polluting activities or elements that should be taxed, avoiding overlapping with other taxes or charges. For instance, it would not make sense to include the

generation of solid urban waste if this is already levied by a local charge following pay-as-you-throw schemes.

Moreover, some regional authorities (Autonomous Communities) have implemented taxes on specific polluting activities (wastewater emissions, congestion caused by large retail outlets, emissions of greenhouse gases and pollutants). Those taxes and charges would need complex coordination with a new local tax on economic polluting activities. It would also be challenging to regulate standard parameters for all taxed activities.

In conclusion, we do not recommend introducing a new general tax on polluting activities at a local level. Instead, the Autonomous Communities could authorise local councils to introduce surcharges on the existing regional taxes on polluting activities with a particular local relevance.

<a>TAX ON CONSTRUCTION WORKS

The Spanish tax on construction, installations and building works is a facultative local tax that is levied on any construction, installation or building work. The taxable base is the cost of the construction works, and the municipality sets the tax rate, but it cannot be higher than 4 per cent.

Revenue from this tax was extremely high during the real-estate bubble in the 2000s. We consider that municipalities' income should not be too dependent on a tax of this kind. On the one hand, revenues from construction activities are unstable; on the other, the building industry has a high environmental impact. A systematic literature review of such environmental impacts¹² shows that the operation stage of the building is responsible for the highest emissions (around 82 per cent), whereas 15 per cent is a consequence of the construction stage (and most of this is due to the manufacture and transportation of materials).

The tax currently includes some tax benefits to promote (or at least not hinder) some construction works that might have a positive impact on the environment in the long run, such as:¹³

- Up to 95 per cent reduction of the tax due for construction and installation works regarding thermal and electric utilisation of solar energy.

- Up to 90 per cent reduction of the tax due for installing charging points for electric vehicles.

However, a more profound reform of the tax on construction works could transform it into an environmental tax, strictly speaking. That is, a tax with a taxable base is a polluting activity. We consider two options. The first one is for the taxable base to reflect the environmental impact of the construction works to the extent that other levies do not tax it.

The second option is for the tax to combine a non-environmental component (which would tax the cost of the construction works) and an environmental component, as proposed above.

Finally, we suggest a simplified method to quantify the tax. For smaller taxpayers, the tax base could be assessed according to the cost of the construction works. However, a tax credit shall be granted if the business has a certified environmental management system.

In any case, to accurately measure the environmental impact, building companies need to have such an environmental management system following the UNE-EN ISO 14001: 2015 Standard

"Environmental management systems" or the Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009, on the voluntary participation by organisations in a community eco-management and audit scheme (EMAS).

We propose that the environmental component of the tax comprehends the following:

1. The occupation of land (where no building activity has occurred before). The aim would be to promote compact urban development and renovation of buildings. Spain falls far from the 3 per cent annual renovation rate needed to accomplish the Union's energy efficiency ambitions cost-effectively [Directive (EU) 2018/844 of the European Parliament and the Council of 30 May 2018].

2. CO₂, NO_x, and particle emissions at the construction site because of the use of vehicles and machinery. Some actions can reduce emissions, such as careful maintenance of machinery and speed limitation of vehicles. For tax purposes, emissions can be calculated directly or indirectly – based on the amount of fuel used.

3. Finally, noise pollution is a relevant source of contamination. Protocols for noise reduction should apply, but they will not suppress all noise, and an environmental tax is a form of compensation for a tolerated activity. Again, for tax purposes, noise can be calculated directly or indirectly by applying a formula regarding total person-hours of work and the number and type of machines used.

On the other hand, the following events should not be taxed by this levy:

The use of materials and generation of waste because there are better tax measures to promote the reutilization and recycling of materials, such as an aggregates tax, a tax on the emissions of greenhouse gases linked to the production of construction materials, or a tax on waste sent to landfill, incineration, and co-incineration. Aggregate taxes have proven to reduce the extraction of raw materials¹⁴, especially when complemented by policies to facilitate material recycling.¹⁵ A landfill tax –which has recently entered into force in Spain– can have such effect, as it aims to enforce the principles of waste hierarchy of article 4 of Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008.

<a>URBAN CONGESTION CHARGES

Urban tolls are charges levied on vehicles transiting through specific areas of a city, usually under the form of congestion taxes (linked to the traffic) or environmental taxes that consider the emissions rate of the vehicle. They translate the negative impacts of the automobile into economic terms that are easily understandable and are a source of financing for reordering traffic according to the so-called "mobility pyramid". Urban tolls have several aims and must be integrated within broader mobility strategies.

Analysis of urban tolls in other cities,¹⁶ such as Singapore, London, Milan, Stockholm, and Gothenburg, leads to several interesting conclusions. On the one hand, tolls have proven effective in reducing the volume of private vehicles and, thus, facilitating the flow of traffic and reducing noise pollution. On the other, their effect on air quality is not homogeneous. Thus, an environmental toll must be accompanied by other public policies that promote other forms of mobility (such as public transport or non-motorised mobility). We can mention some examples: Oslo has an investment plan on roads and public transport ("Oslopakke 3") that is mainly funded on urban tolls; Milan's "Area C" congestion tax has collected € 13 million applied to improvements in the subway, tram, bus, and bicycle networks.¹⁷

In Spain, a bill on sustainable mobility aimed to promote the creation of low emissions zones in municipalities with a population above 50,000 citizens. However, this bill has expired because of the dissolution of parliament after the call for elections. Municipalities do not have legislative competencies. Thus, an act issued by the State must allow them to create such a fee. Legislation currently in force (Act on Local Finances) does not allow the creation of such tolls.

On the contrary, when the fundamentals of local finances were set in 1975, a decision was made to suppress any tax on vehicle circulation, and a tax on vehicle property was created instead. This criterion prevents local taxation of vehicles based on the intensity of their use. It would be helpful to discourage private car-based mobility and encourage public transport and non-motorised mobility.¹⁸

Private vehicle circulation is traditionally considered a "common use" of roads. *Common use* is the use that corresponds equally and indistinctly to all citizens so that the use by some does not prevent the use by others. Common use cannot be subject to a fee. However, the concept of common use evolves with time, according to behaviour patterns that impact the scarcity of resources. For example, when the increase in car use caused a lack of parking spaces in the street, parking on public roads ceased to be a common use. This circumstance allowed municipalities to charge a fee for street parking.

The same argument could support a congestion fee or an environmental urban toll. According to law, municipalities can adopt several measures to guarantee the fluidity of traffic or for environmental reasons, including partial or complete prohibition of access to parts of the road, applying to all vehicles or just specific categories of them. A fee could be one of such measures (as it is materially equivalent to a "partial prohibition of access"). For simplicity's sake, the fee could be a flat hourly rate¹⁹ that must discourage vehicle use to grant EU standards on air quality. Automatised systems are needed to calculate and charge the fee, which is faster and more effective and prevents conflicts and administrative sanctions.²⁰

<a>TAXES ON IMMOVABLE PROPERTY

One of the leading environmental impacts of real estate is the CO₂ emissions from energy consumption. Within the EU, the Commission has pointed out that buildings are responsible for 40 per cent of the final energy consumption and for 36 per cent of CO₂ emissions, mainly generated by the construction, use, renovation and demolition of buildings.

Several estimations point out that the renovation of existing buildings could reduce the total energy consumption in the EU by 5 to 6 per cent and reduce CO₂ emissions by around 5 percent . In Spain, the Ministry for Ecological Transition has assessed that buildings involve 30 per cent of energy consumption, and the use of energy within houses accounts for one-fifth of all the greenhouse gas emissions in our country. If we add the emissions of public works on buildings, we can conclude that the residential sector concentrates one-third of the national Greenhouse gas emissions.

All EU members must improve the energy efficiency of real estate. To achieve this goal, several measures may be adopted, including fiscal measures:

- The introduction of specific elements in existing taxes on real estate, measuring the tax base with the energetic efficiency of the building, and using the Energy Certification of the buildings as an assessment instrument.

- Designing new taxes. We propose a tax on CO₂ emissions of real estate, with the main points being as follows:²¹

It could be a national tax, with joint administration with Local Entities. The main reason for this is threefold:

1. We find ourselves facing an environmental challenge with global consequences, which recommends a centralised tax at the national level.
2. The Central Government has assumed the goal to achieve a certain number of renovated buildings.
3. With this management, we could avoid the creation of similar taxes by regional or local authorities.

The taxable event would be the potential CO₂ emissions produced by urban buildings (not by buildings located on rural land nor by real estate of unique characteristics, such as solar farms or nuclear power plants). Highly energy-efficient buildings (qualified as A or B) should be tax-exempt. The taxpayer should be the property owner (individuals and legal entities).

The taxable base would be the building's potential emissions of CO₂, considering the available energy efficiency certificate. A theoretical alternative would be to tax effective emissions (as the final goal of this tax is to reduce pollutant emissions to the atmosphere). However, it would be easier to tax potential emissions. Furthermore, this second option would promote the renovation of buildings from the point of view of energy efficiency (which would align with the polluter-pays principle). Rates should be progressive, considering the energy efficiency certification of the building.

The tax will be payable periodically, accruing on 1 January. A transitional period should be considered. The tax should be implemented gradually, offering a full tax credit that would gradually be reduced. The goal of this provision would be to allow taxpayers a reasonable period to renovate or rehabilitate the buildings, improving their energy efficiency.²² An appropriate public opinion campaign would facilitate the progressive implementation of the tax.

The proposed reform would not jeopardise the tax revenue potential of the current Spanish tax on real estate (local authorities' primary source of tax revenue). Moreover, it would lead to the abolition of current environmental tax incentives on the real estate tax.

Another advantage of our proposal is the national character of the new tax, therefore eliminating all the problems associated with creating a new tax within the local administration. Among other advantages, we can point out the non-fiscal character of the new tax, and, as such, the goal is not entirely to raise money but also to boost conduct more respectful of the environment.

Regarding the drawbacks, we can point out that the new tax could be burdensome for those people with a lower ability to pay: Generally, people with lower income occupy old buildings that have not been renovated and are less energy efficient. As such, it is necessary to articulate measures to grant a fair transition.

<a>FEES ON WASTE MANAGEMENT

Legal reform of local waste charges

The Spanish parliament passed an Act on Waste and Contaminated Soil in a Circular Economy (Parliamentary Act 7/2022 of 8 April) based on the EU Directive 2008/98/CE on waste.

Among other provisions, it compels local entities to regulate by April 2025 waste charges based on pay-as-you-throw schemes, covering the entire cost of collecting, processing, and recycling urban trash.

In 2023 not all Spanish local levy a charge for waste collection and management services.

Furthermore, most existing charges do not cover the entire cost nor follow pay-as-you-throw patterns.²³ The new Act on Waste grants municipalities a three-year deadline to implement the new fees through local ordinances. Achieving this goal will be difficult, and the legislation does not provide specific consequences if the municipalities fail to enact the required charges.

Furthermore, the Act establishes a new tax on waste landfills and incineration to reinforce recycling. The primary taxpayers are municipalities. Therefore, they should foster residents and businesses to reduce the non-recyclable fraction.

European and constitutional legal framework

The Parliamentary Act on Waste and Contaminated Soils for a Circular Economy aims to implement the EU Directive 2018/851 of the European Parliament and of the Council of 30 May 2018, amending Directive 2008/98/EC on waste.

The directive is not of a fiscal nature nor provides rules on tax harmonisation. It establishes that Member States shall use economic instruments and other measures to provide incentives for applying the waste hierarchy, such as those indicated in Annex IV.a".

Such annexe mentions, among other examples, "Charges and restrictions for the landfilling and incineration of waste which incentivise waste prevention and recycling, while keeping landfilling the least preferred waste management option" and "Pay-as-you-throw schemes that charge waste producers based on the actual amount of waste generated and provide incentives for separation at source of recyclable waste and for reduction of mixed waste".

The Spanish legislator has partially followed these "examples", introducing a new tax (not a charge) on waste landfilling and incineration.²⁴ Furthermore, the law has reformulated local fees on waste to adapt them to the directive's example, as suggested by the European Commission in its Country Report on Spain regarding "The EU Environmental Implementation Review".²⁵

Therefore, we can conclude that the new tax and charge are recommended -although not imposed- by EU law and are in coherence with the principles of a circular economy.

We arrive at a similar conclusion from a Constitutional point of view. According to article 45(3) of the Spanish Constitution (1978): "The public authorities shall safeguard rational use of all natural resources to protect and improve the quality of life and preserving and restoring the environment, by

relying on essential collective solidarity". Therefore, we need a circular economy to preserve and restore the environment. Moreover, the new tax and charges are suitable tools to achieve the abovementioned goals.

The future local charge for waste management

According to Art. 11(3) of the parliamentary Act:

Within three years from the law's entry into force, local entities will establish a charge or levy on waste management. It should be specific, differentiated, and non-loss-making, enabling throw-as-you-pay systems.

The charge or levy should reflect the actual cost, direct or indirect, of the collection, transport, and treatment of waste, including monitoring those operations and the maintenance and monitoring after the closure of landfills.

As mentioned, not all local Spanish entities currently levy a charge for waste collection and management services. Furthermore, most existing charges do not cover the entire cost nor follow pay-as-you-throw patterns. The new Act on Waste grants municipalities a three-year deadline to implement the new charges through local ordinances. Achieving this goal will be difficult, and the legislation does not provide specific consequences if the municipalities fail to enact the required charges.

Interpretation and binding force of the throw-as-you-pay principle

The first challenge is understanding the following legal expression: the new charges and levies "should make it possible to implement throw-as-you-pay systems". Annexe IV.a (2) of the EU Directive defines "throw-as-you-pay" systems as "schemes that charge waste producers based on the actual amount of waste generated and provide incentives for separation at source of recyclable waste and for reduction of mixed waste".

Does the Spanish law order that every local waste charge (on houses and businesses) follow strict throw-as-you-pay schemes, or is this provision a mere recommendation? For example, would it suffice that some taxpayers (large local waste producers) are charged according to the amount of waste generated? Would it be enough to introduce allowances for home composting or clean points?

According to the law's preamble, the new charges "should tend towards throw-as-you-pay schemes".

This wording suggests we deal with a recommendation, not a formal legal requirement.

The parliamentary process reinforces the previous interpretation: several parliamentary amendments were submitted to Congress and the Senate to clarify that the pay-as-you-throw scheme should be compulsory, but they were rejected.

In our opinion, the solution should be to reform the Parliamentary Act on Local Finances to introduce more detailed provisions on how local entities should implement the pay-as-you-throw principle after the three-year deadline. For instance, it could be mandatory for businesses or large local waste producers.²⁶

Compulsory coverage of all costs related to the collection and treatment of solid urban waste

The reform will imply a considerable cost increase for households and businesses with a risk of political unrest. In addition, it will not be easy to assess the total costs of the service and design criteria to allocate them among service users.

The legislator has approached this issue by granting the municipalities three years to implement the new charges. However, this strategy is a poor one. It does not offer specific clues on how to act and does not draft a step-by-step way to grant a smooth transition.

We believe the best solution would have been to introduce partial deadlines. For instance, there could be a two-year deadline to cover 50 per cent of the costs, four years to cover 75 per cent and six years to recover the costs entirely. These partial deadlines could also include specific rules to apply the pay-as-you-throw principle.

Lack of specific criteria to quantify the individual charge due

Along with the parliamentary procedure, some amendments proposed a committee to put forward a detailed proposal of the new charges or recommendations for the local entities. Nevertheless, these amendments failed.

The parliamentary chambers approved other amendments that provide details on the design of the future charges. They may provide:

1. Allowances for home composting.
2. Allowances for the use of clean points.
3. Rebates for persons and families at risk of social exclusion.

These rules are sensible, but their legal relevance is minor. On the one hand, the provisions are optional for the local entities. They may introduce such provisions through local ordinances but are not bound to do so. On the other hand, specific legal provisions are not needed to introduce allowances based on the ability to pay principle or behaviours that reduce waste management costs.

The Parliamentary Act provides that local entities must communicate the new charges and the calculations used for their preparation to the competent authorities of the autonomous communities. However, the law does not provide any coercive instrument to the regional authorities if the local authorities do not correctly implement the new charges.

Conclusions

We welcome the introduction of a new local charge on waste based on pay-as-you-throw schemes. It is an appropriate and necessary economic tool to advance toward a circular economy.

The main problem is the lack of legally binding criteria for designing the new charge and the individual quantification criteria for individuals and businesses. The solution would be to introduce a new legal reform detailing how to apply pay-as-you-throw schemes and how to quantify the individual charge due.

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- ²⁰ See M. Serrat Romani, loc. cit.
- ²¹ See A. del Blanco García, B. García Carretero, “Diseño de un nuevo impuesto sobre las emisiones de CO2 de los Bienes Inmuebles”, *Documentos de Trabajo del Instituto de Estudios Fiscales*, 3, 2023, p. 211 ff.
- ²² See J.F. Sedeño López, “Eficiencia energética de inmuebles: Situación actual y mecanismos alternativos de financiación para la rehabilitación”, *Documentos de Trabajo del Instituto de Estudios Fiscales*, 3, 2023, p. 233 ff.
- ²³ I. Castells Rey, P. Pellicer García, Ignasi Puig Ventosa (ed.), *Las tasas de residuos en España 2022*, Fundació ENT, Vilanova i la Geltrú, 2023, p. 17 ff.
- ²⁴ Municipalities are the main taxpayers of the tax on landfilling, incineration, and co-incineration of waste.

²⁵ Commission Staff Working Document *The EU Environmental Implementation Review 2019 Country Report - SPAIN* Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Environmental Implementation Review 2019: A Europe that protects its citizens and enhances their quality of life, SWD/2019/132 final.

²⁶ A. Llabrés Payeras and I. Puig Ventosa have developed a model for a municipal tax on commercial waste, “Elaboración de un modelo de tasa municipal sobre los residuos comerciales”, *Documentos de trabajo del IEF*, 3, 2022.