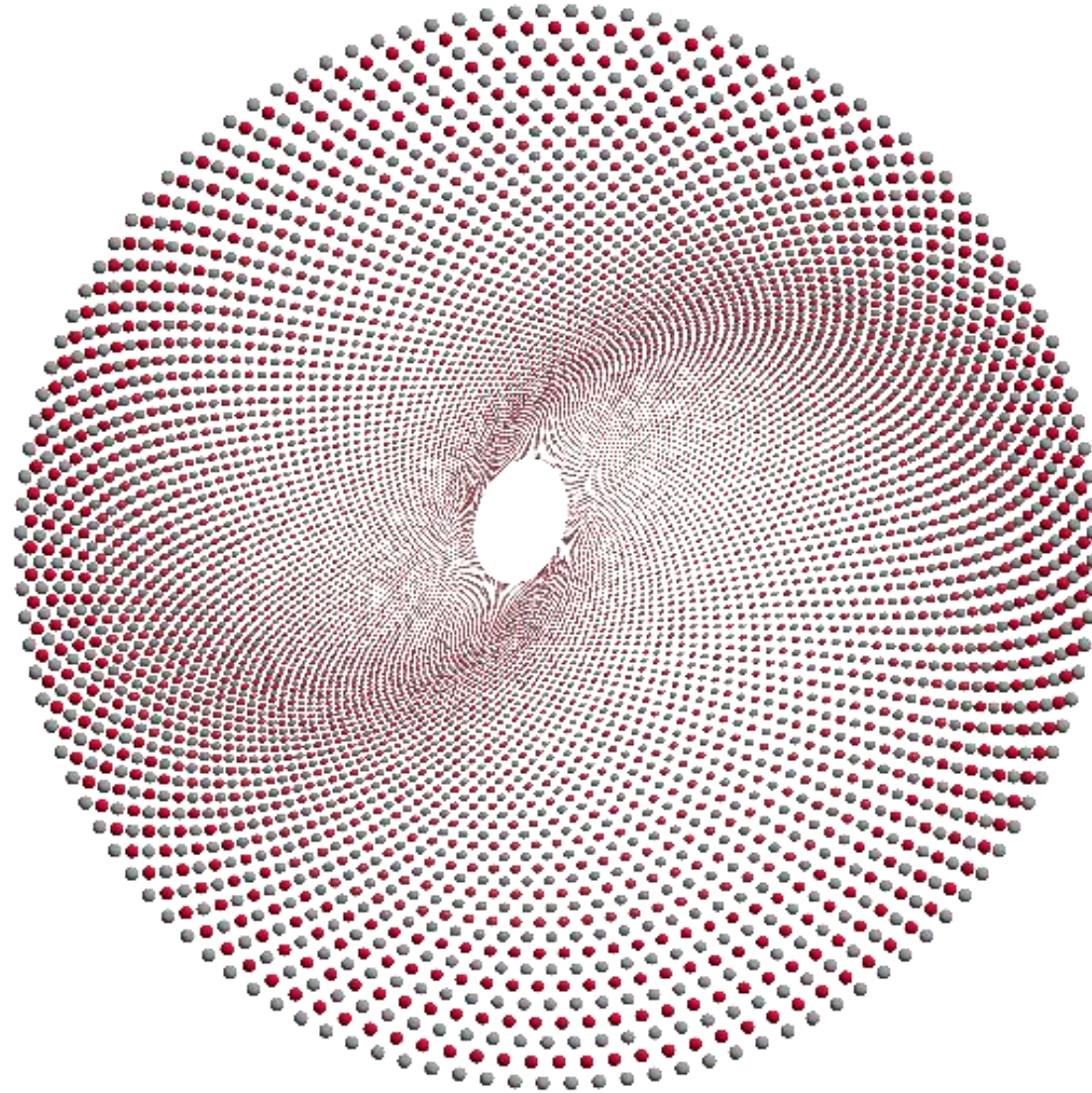




## ENNO: The Case

June 2026

# The Problem

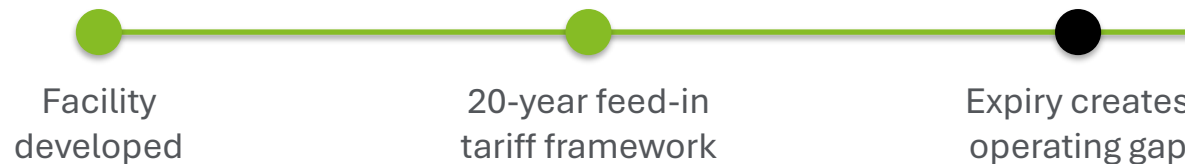
Maintaining a critical waste-to-energy facility beyond the 20-year support period

## Tariff support ended, but landfill-diversion obligations did not.

LIPOR owns a waste-to-energy facility that is essential to meet municipal solid waste diversion targets.

The facility was developed under a framework remunerating electricity generation through a 20-year feed-in tariff.

As the support period expired, legal constraints arising from EU competition law and the internal energy market made a further remuneration period unavailable.



**20** year feed-in tariff period

### What must still happen

- 01** Maintain facility operation to meet landfill diversion targets
- 02** Ensure continuity around waste inflows, not energy market signals
- 03** Navigate legal constraints on further remuneration

**Core issue: the public-service need continues after tariff remuneration ends.**

# The Problem

Legal and economic constraints on the solution design

The solution must reconcile public-service duties with market volatility.

## 01 Public nature of LIPOR

LIPOR's public nature restricts purely commercial objectives and subjects decisions to public procurement rules, a framework not compatible with the flexibility and dynamics of the energy market.

## 02 Need for a predictable tariff

Any variation in the electricity sale price would directly affect the waste treatment fee. Because that fee is regulated, it requires a high degree of predictability.

## 03 decision question

What measures could be adopted to ensure the continued operation of the facility, while securing a stable revenue stream?

**Both dimensions matter:**

**Price** stability

**Consumption** certainty

# Balance between supply and demand

A legally continuous self-consumption perimeter matched 27 MW to eligible public demand.

## 01 Balance supply and demand

Generation capacity and consumption needs were assessed together so production could be allocated to real public loads.

## 02 Continuity and proximity

Eligible consumers had to be physically continuous and proximate to the generation unit; one municipality was excluded where the Douro River and Vila Nova de Gaia created a discontinuity.

### Consumption points considered

- Municipal buildings
- Municipal assets & companies
- Public lighting
- APDL + São João Hospital

**27** MW generation capacity

### Consumption universe identified

- 01 LIPOR municipalities' buildings
- 02 Municipal assets and companies
- 03 Public lighting infrastructure
- 04 APDL, São João Hospital and selected public entities

**Core result: eligible demand mapped to support a decentralised renewable energy solution.**

# Distances

ENNO renewable energy community

ENNO converts mapped demand into a stable renewable energy community.

## 01 Demand baseline

More than 11,000 metering points were identified to balance the facility's supply with eligible public demand.

## 02 Proximity & continuity

The solution addressed territorial continuity and proximity, with a derogation request for justified distances beyond standard thresholds.

## 03 ENNO created

Energia do Norte was established as a 28-member renewable energy community, linking lower-cost energy with facility continuity.

Operating logic: supply–demand balance, legal perimeter and community membership work together.

**11,000+** metering points identified

**28** members in ENNO

**10 km**  
standard distance threshold considered for derogation

Core result:

**a stable self-consumption perimeter supports lower-cost energy and sustains the waste-to-energy system.**

## Operational model for decentralized production

A member association links LIPOR generation to eligible demand through shared tariff governance and allocation coefficients.

### Association perimeter

**01 LIPOR**

Energy recovery facility

**02 Member municipalities**

All participating municipalities except one

**03 Ports Administration**

Douro, Leixões and Viana do Castelo

**04 São João Hospital**

Public eligible demand

### How the model operates

**01 Set tariff**

Members set the shared electricity tariff on a triennial basis.

**02 Prioritize LIPOR supply**

Energy needs are met primarily from LIPOR's generated electricity.

**03 Allocate by coefficients**

Predefined percentages assign energy volume to each participant.

**Operating logic:** membership, tariff-setting and sharing coefficients convert facility output into allocated community energy.

# Found Model

01

These coefficients may take different forms: Fixed coefficients, established in advance and remaining stable over time;

02

Variable coefficients, adjusted according to consumption patterns or other criteria defined by the community;

03

Hybrid coefficients (fixed and variable), combining a stable component with an adjustable component;

04

Dynamic coefficients, determined on a time-sensitive basis, allowing for continuous adjustment in response to variations in generation and consumption.

## Porto Energy Agency manages the EGAC layer

A single operating layer coordinates grid agreements, energy-flow data and member invoicing.



### What the EGAC is responsible for

01

#### Formalize agreements

Enter agreements with the distribution system operator.

02

#### Manage flows & data

Coordinate flows and consumption data.

03

#### Issue member invoices

Prepare invoices for community members.

**Result:** one accountable layer links grid obligations, data and billing.

# Management entity duties for the CER

The EGAC role connects regulation, members, network operators and settlement.

## Core obligations

01

### Regulatory registration

Register on the DL 17/2022 platform, liaise with DGEG, and monitor production / consumption data.

02

### Member governance

Manage admissions and withdrawals; ensure compliance with sharing rules and allocation coefficients.

03

### Operators & charges

Communicate the sharing model and amendments; collect approved operating, network and energy charges.

04

### Surplus & operations

Allocate surplus energy and manage operations, including suspension where justified for safety or compliance.

**Operating focus:** regulatory interface, member governance, energy allocation and financial settlement stay aligned.

## Found Model

In addition to the Association's articles of association, an internal regulation has been adopted setting out the operational framework of the Community.

This regulation governs the conditions for the use of self-consumption generation units (UPAC), the models and coefficients for energy sharing, the admission and withdrawal of members, the rights and obligations of participants, as well as billing and payment mechanisms, the management of surplus energy, coordination with network operators, decision-making procedures, dispute resolution, and compliance with personal data protection requirements.

Availability agreement: LIPOR → ENNO

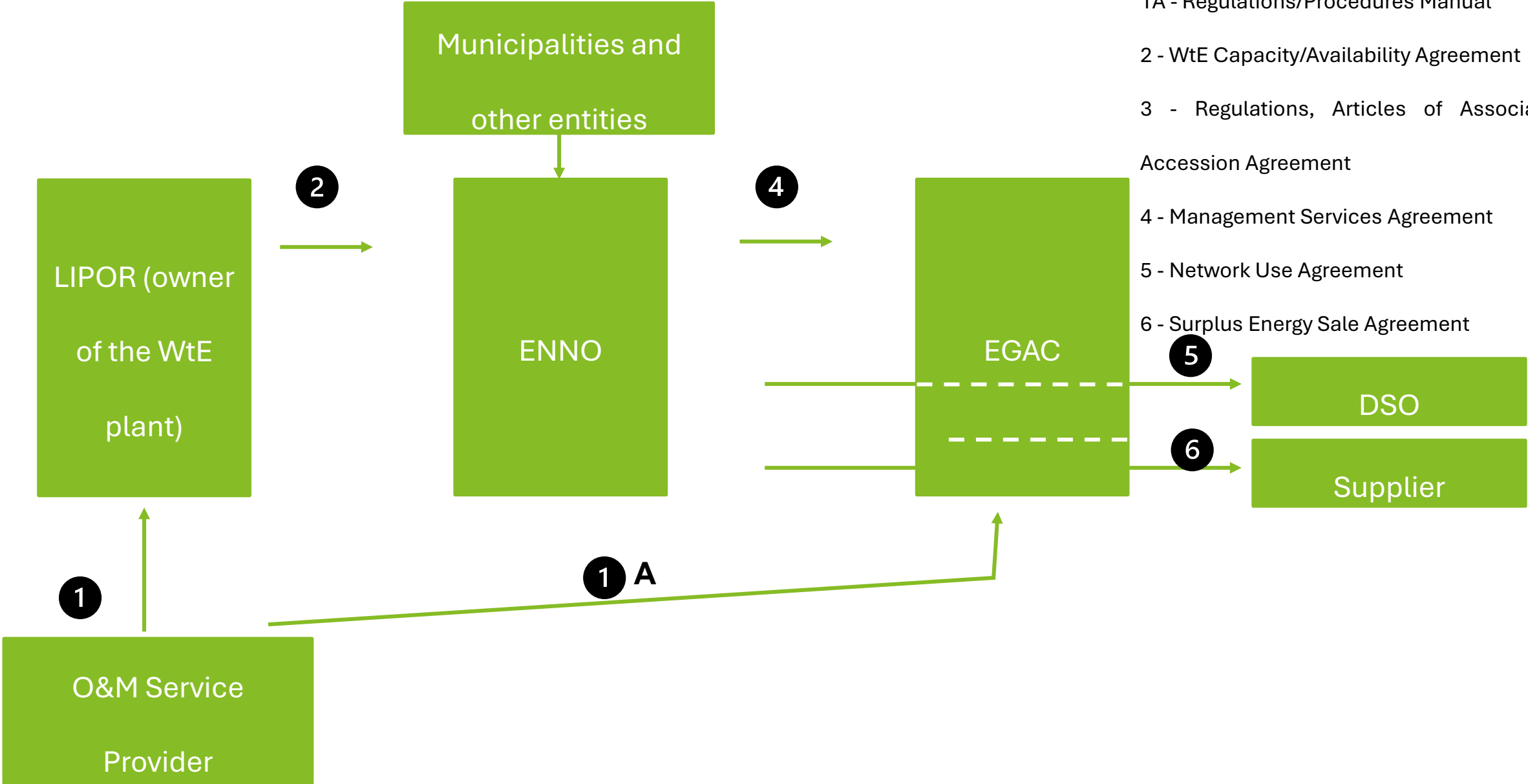
The agreement grants ENNO temporary use of the WtE plant output and defines how energy value flows through the community.

| Agreement basis                                                                                                                                                       | Allocation logic                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <p>ENNO receives a temporary right to use and enjoy the electricity generated by LIPOR’s waste-to-energy plant under a self-consumption regime.</p>                   | <div><div>01</div><div><p><b>WtE generation</b></p><p>LIPOR WtE output becomes the source for community allocation.</p></div></div>    |
| <p><b>Consideration to LIPOR</b></p> <p>In return, ENNO ensures allocation of that energy among Renewable Energy Community members for self-consumption purposes.</p> | <div><div>02</div><div><p><b>REC members</b></p><p>Allocated exclusively for member self-consumption.</p></div></div>                  |
|                                                                                                                                                                       | <div><div>03</div><div><p><b>Surplus energy</b></p><p>Surplus supports vulnerable households via the municipal scheme.</p></div></div> |

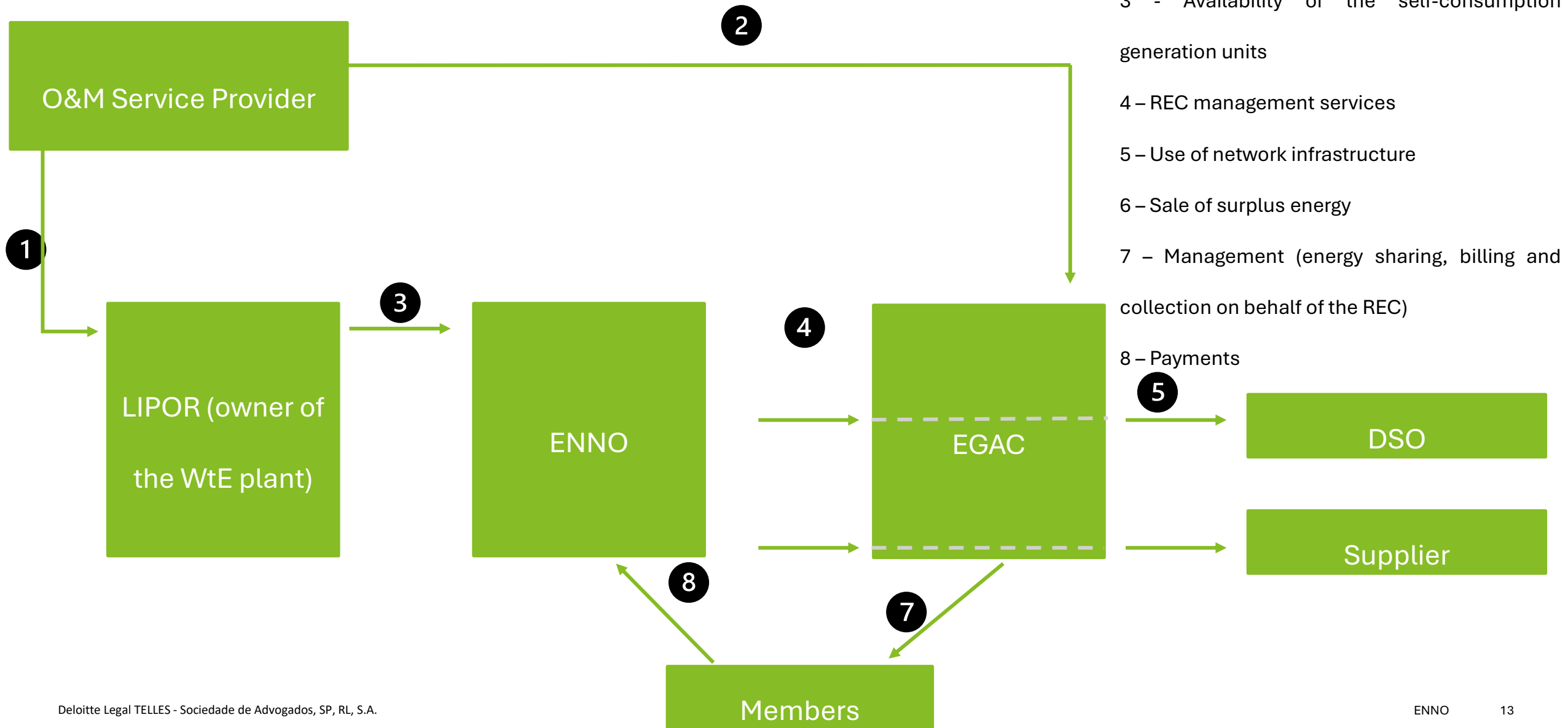
**Key effect:** LIPOR generation becomes allocated community energy, with surplus reserved for social support.

# Contracts

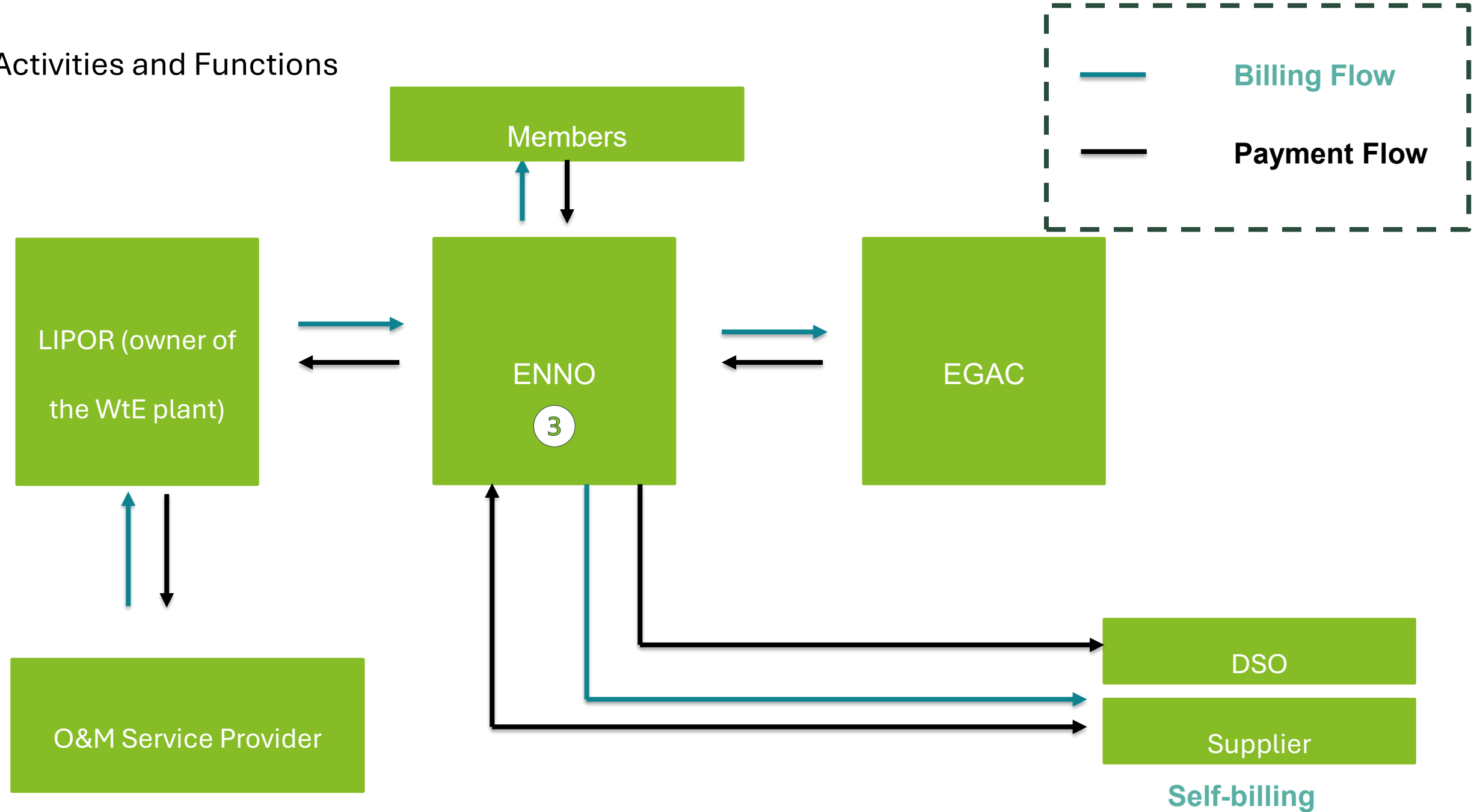
- 1 - O&M Services Agreement
- 1A - Regulations/Procedures Manual
- 2 - WtE Capacity/Availability Agreement
- 3 - Regulations, Articles of Association and Accession Agreement
- 4 - Management Services Agreement
- 5 - Network Use Agreement
- 6 - Surplus Energy Sale Agreement



# Activities and Functions



Activities and Functions





**Ivone Rocha - Partner**

[ivrocha@deloittelegaltelles.pt](mailto:ivrocha@deloittelegaltelles.pt)

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