# European Practice of the Guarantees of Origin Implementation

UNDP Project “Supporting Green Recovery in Ukraine”

# European Experience

## Directive 2018/2001/EC

GO: Promotional instrument of electricity from RE

Accurate, reliable, fraud-resistant system

Size 1MWh – validity 12 mnth

Supervision

IB: electronically issue, transfer, cancell GO

Electricity, HE CHP, Renewable gases/hydrogen

## Directive 2009/72/EC

...contribution of each energy source to the overall fuel mix...

# GO system: Core elements

## Unbundled energy attribute certificates (EACs) 1

A company purchases attribute certificates of renewable energy separately "unbundled" from its electricity. Examples of certificate systems are guarantees of origin (GOs) and renewable energy certificates (RECs).

## Power Purchase Agreements (PPAs) 2

A company enters into a contract with an independent power producer, a utility or a financier and commits to purchasing a specific amount of renewable electricity, or the output from a specific asset, at an agreed price and for an agreed period of time.

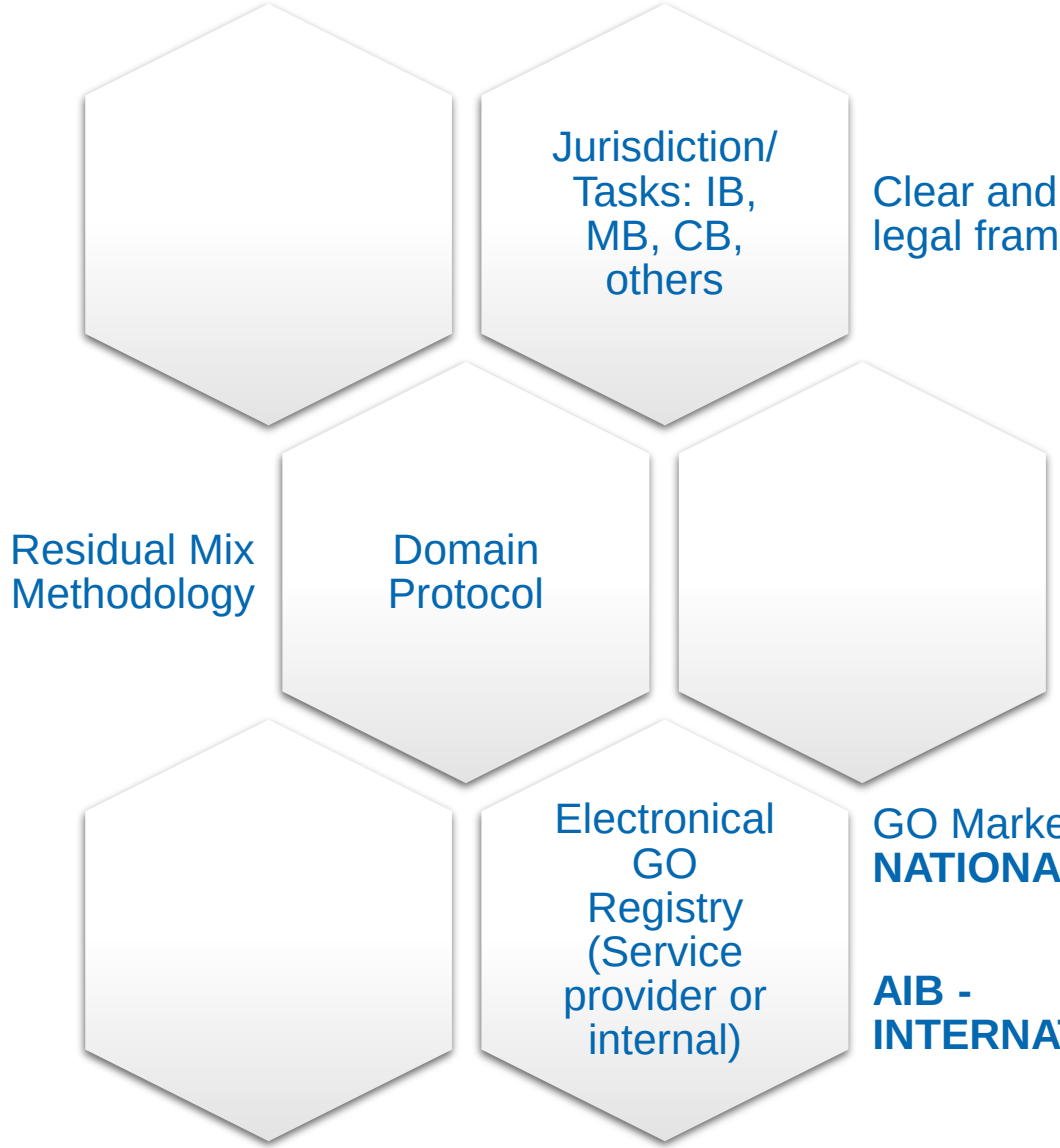
## Renewable energy offerings from utilities or electric suppliers 3

A company purchases renewable electricity from its utility either through green premium products or through a tailored renewable electricity contract, such as a green tariff programme.

## Production for self-consumption 4

A company invests in its own renewable energy systems, on-site or off-site, to produce electricity primarily for self-consumption.

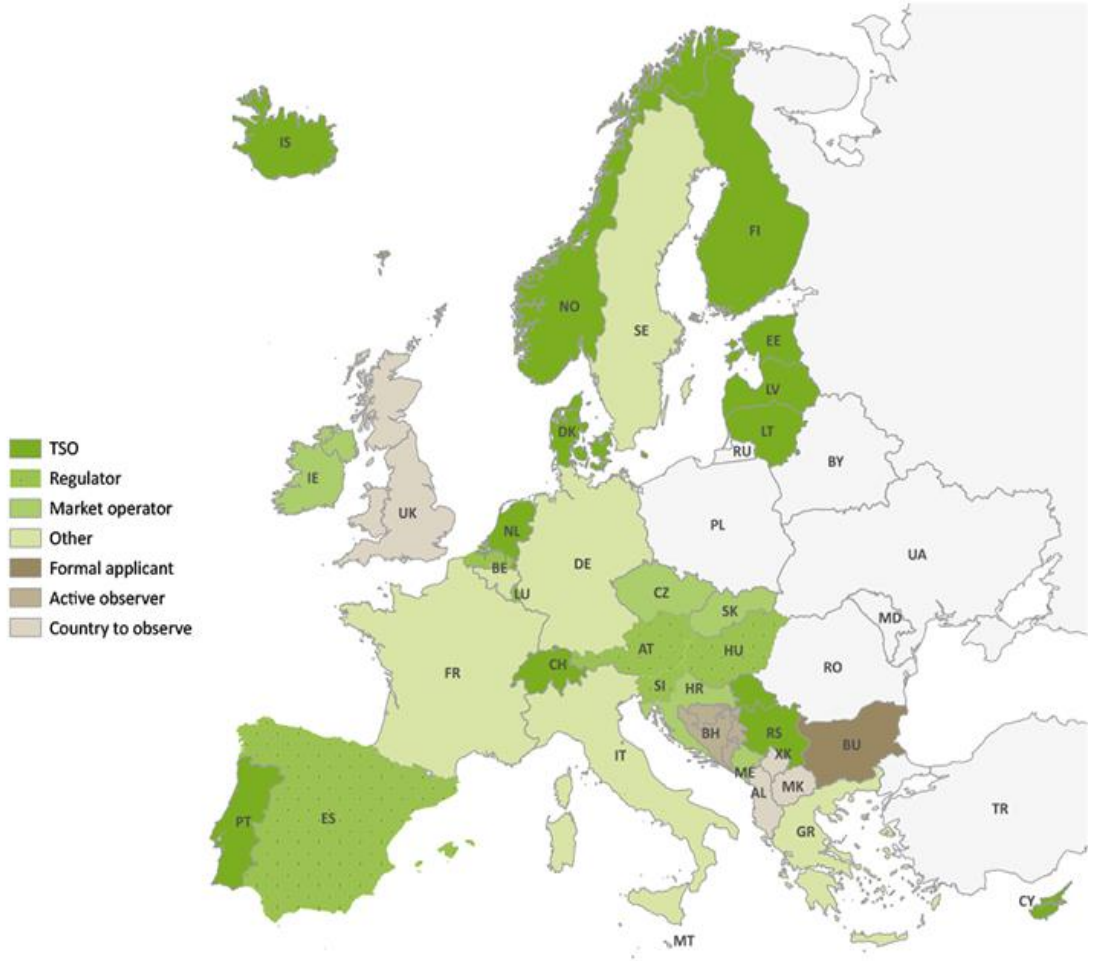
# GO system : Resources



# AIB and its Members

- AIB: non-profit association founded in 2002
- 27 countries connected; 31 members
- Geo-scope: EU - EFTA – Energy Community
- IB: regulator, market operator, TSO, ministry, power exchange...
- All AIB's current members are IBs for **electricity** GOs
- About half AIB's members are also competent bodies for the supervision of electricity disclosure
- 8 AIB members assigned by their government for issuing GOs for gases – more to follow
- Developer and custodian of the EECS© standard

AIB Mission: Guaranteeing the origin of European Energy




## Pillars of the European Energy Certificate System (EECS©)

I. **EECS Rules**: engaging into quality and harmonisation
II. **IT hub**: enables GO transfer between national/regional Domain registrie
III. Peer reviews and **audits**

# GO system: Resources

| | Denmark | Germany | Netherland |
|---|---|---|---|
| CA | Danish Energy Agency | German Environmental Agency UBA | CertiQ |
| IB | Energinet | German Environmental Agency UBA | CertiQ |
| RO | DSO | German Environmental Agency UBA | CertiQ |
| AMB | DSO | Grid Operator | Netbeher (Grid operator) |
| PA | Energienet | German inspection body DAU | DSO, TSO |
| Legal framework | Dutch Electricity Act 1998 Regulation on Gos | RES Act EEG | Order on the GOs |
| GO Registry | CMO; Identity: Energinet | HKNR; Identity: UBA | CERTIIQ; Identity: Tennel T |
| RES Productions /GO | 23,226/21,843 GWh | 251,014/17,050 GWh | 31,000/28,600 GWh |

# GOs for

**Greece:** RES or HEC

**Denmark:** RES or HEC

**Germany:** RES and energy from landfill gas/sewage treatment gas, biologically degradable part of waste from households and industry

**Serbia:** RES

**Netherland:** RES and CHP

**Poland:** RES and CHP

# GOs for...

The scheme for hydrogen certification - not been implemented yet.

In AIB there is only one observer member HINICIO (Denmark).

The project CertifHy is financed EU project with aim to support implementation of hydrogen certification EU wide.

No examples and expiriences - follow the project (https://www.certifhy.eu/ )

# GOs for...

CertifHy

**CertifHy aims to develop the 1st European-wide Green and Low Carbon hydrogen GO scheme**

2014 — 2016 — 2017 — 2018/9 — 2020s..

## Phase 1

1. Define a widely acceptable definition of green hydrogen
2. Determine how to design and implement a robust EU wide GO scheme

**Affiliated partners:**

TOTAL, MACHIELS, AkzoNobel, colruyt, Shell, AIR PRODUCTS, AREVA $H_2$Gen, BMW, EDF, AIR LIQUIDE, THE LINDE GROUP, HYDROGENICS, uniper, OMV

## Phase 2

1. Set-up a hydrogen GO Stakeholder platform
2. Finalise the scheme design ensuring it can be the main route to guarantee the origin of green & low carbon hydrogen across EU Member States
3. Run a pilot scheme to test the proposed design
4. Identify actions which need to be undertaken after the completion of the study to achieve an EU wide deployment of the scheme

## Phase 3

1. Prepare EU wide deployment:
   Implement Scheme:
   - Gas Scheme Group of AIB
   - Voluntary Issuing Body
   - Expand Stakeholder Forum with WG on Issuing Bodies
2. Expand from GOs to RFNBO certification

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# GO pricing and trends...

MARKET TRADE VIA TRADERS AND BROKERS

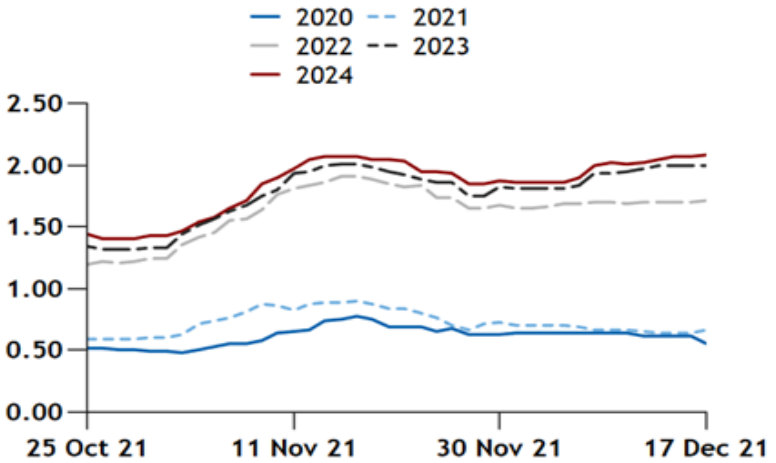
AUCTIONS FOR GOs FOR SUBSIDIZED PLANTS

ADDITIONAL VALUE FOR EVERY PRODUCT

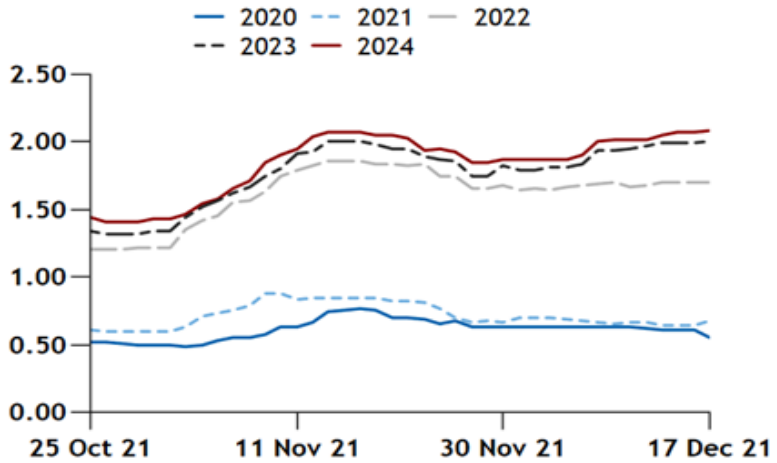
# GO pricing and trends

| Guarantee of origin certificates | | | | | | | | | | | | €/MWh |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nordic hydro | | | European wind | | | European solar | | | European biomass | | |
| | Bid | Ask | ± | Bid | Ask | ± | Bid | Ask | ± | Bid | Ask | ± |
| 2020 | 0.50 | 0.60 | -0.060 | 0.50 | 0.60 | -0.060 | 0.50 | 0.62 | -0.055 | 0.50 | 0.58 | -0.010 |
| 2021 | 0.64 | 0.69 | 0.020 | 0.65 | 0.70 | 0.030 | 0.62 | 0.70 | 0.030 | 0.60 | 0.68 | 0.020 |
| 2022 | 1.68 | 1.74 | 0.005 | 1.67 | 1.73 | 0.005 | 1.65 | 1.75 | nc | 1.62 | 1.71 | -0.005 |
| 2023 | 1.95 | 2.05 | 0.010 | 1.95 | 2.05 | 0.010 | 1.95 | 2.05 | 0.005 | 1.88 | 2.00 | 0.015 |
| 2024 | 2.03 | 2.13 | 0.010 | 2.03 | 2.13 | 0.010 | 2.00 | 2.16 | 0.005 | 1.92 | 2.12 | nc |

Nordic hydro GOOs €/MWh




European wind GOOs €/MWh



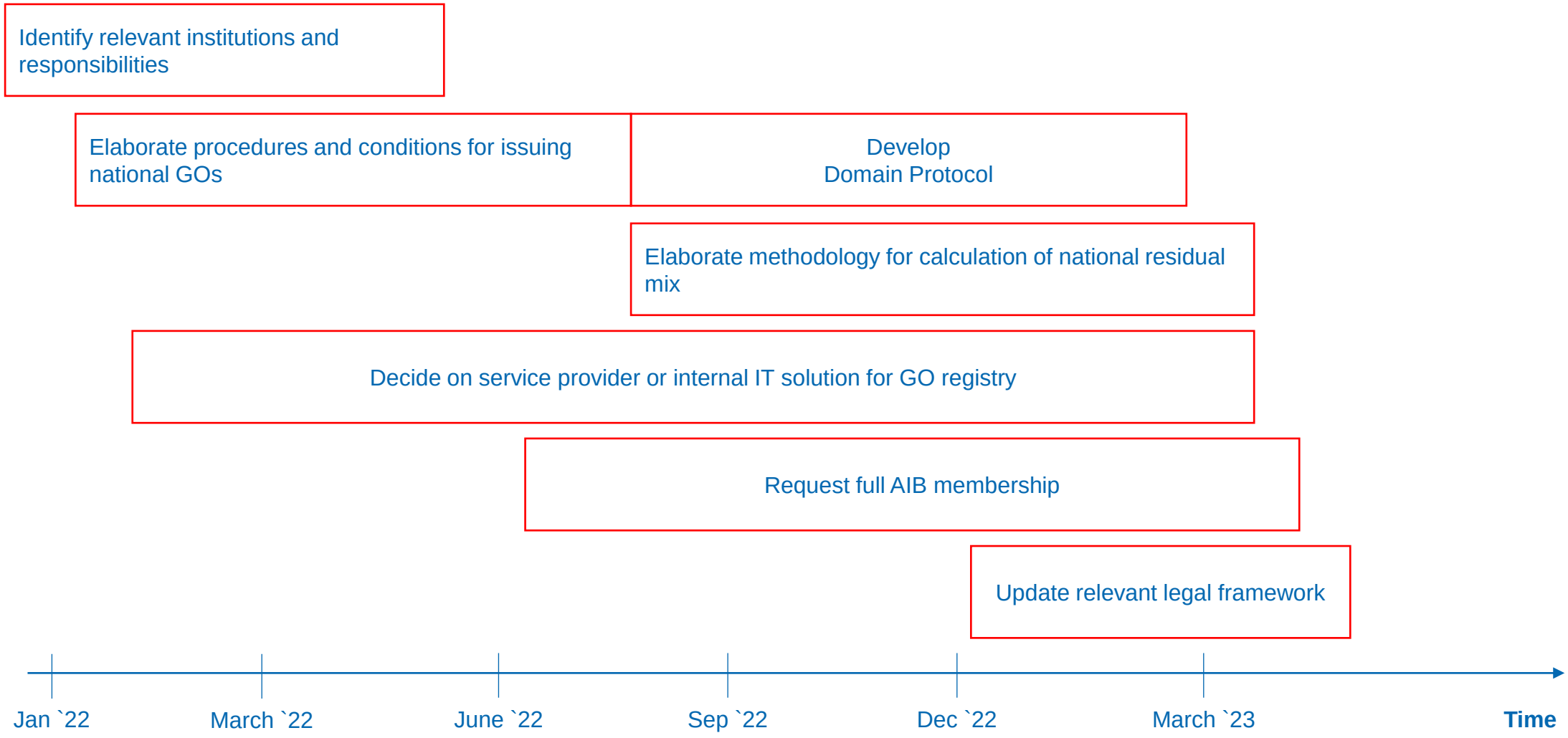
# GO pricing and trends

- European hydro 2023 GOOs were seen to trade at €2.105/MWh and Nordic hydro 2023 was assessed at €2.10/MWh, edging down from €2.11/MWh late in December.

- No trades were seen for vintages beyond 2023. Nordic hydro 2024 was assessed at €2.16/MWh while 2025 was assessed at €2.21/MWh.

- In Italy, traded volumes for GOOs exchanged on energy market operator GME's bilateral platform in December reached their highest since March, although the clearing price was lower in comparison with November and a year earlier. Volumes totaled 4.79TWh, up by 2.62TWh on the month and by 193.30GWh on the year, and the highest since March when they hit 31.72TWh. The average price cleared at €0.31/MWh, down by €0.14/MWh on the month and €0.03/MWh lower than in December 2020. GOOs were priced as high as €1.45/MWh for hydro and as low as €0/MWh for hydro, solar and "other" certificates, comprising GOOs from technologies other than wind, solar and hydro.

# Conclusions: TIME



# Conclusions: timeframe for joining AIB

- The graph can be used as the future Roadmap for Ukraine
- Serbia sent the membership application form on 27 April 2018 and they became a member on 30 September 2019.
- Croatia was under monitor for the 5 year period
- A membership application process can run into many hurdles such as insufficient disclosure system, issues building the registry, political instability, budgetary restrictions etc.

THANK YOU!

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