



Economical compost and digestate process management: case NPirriK

NUTRIMAN (H2020 – 818470)

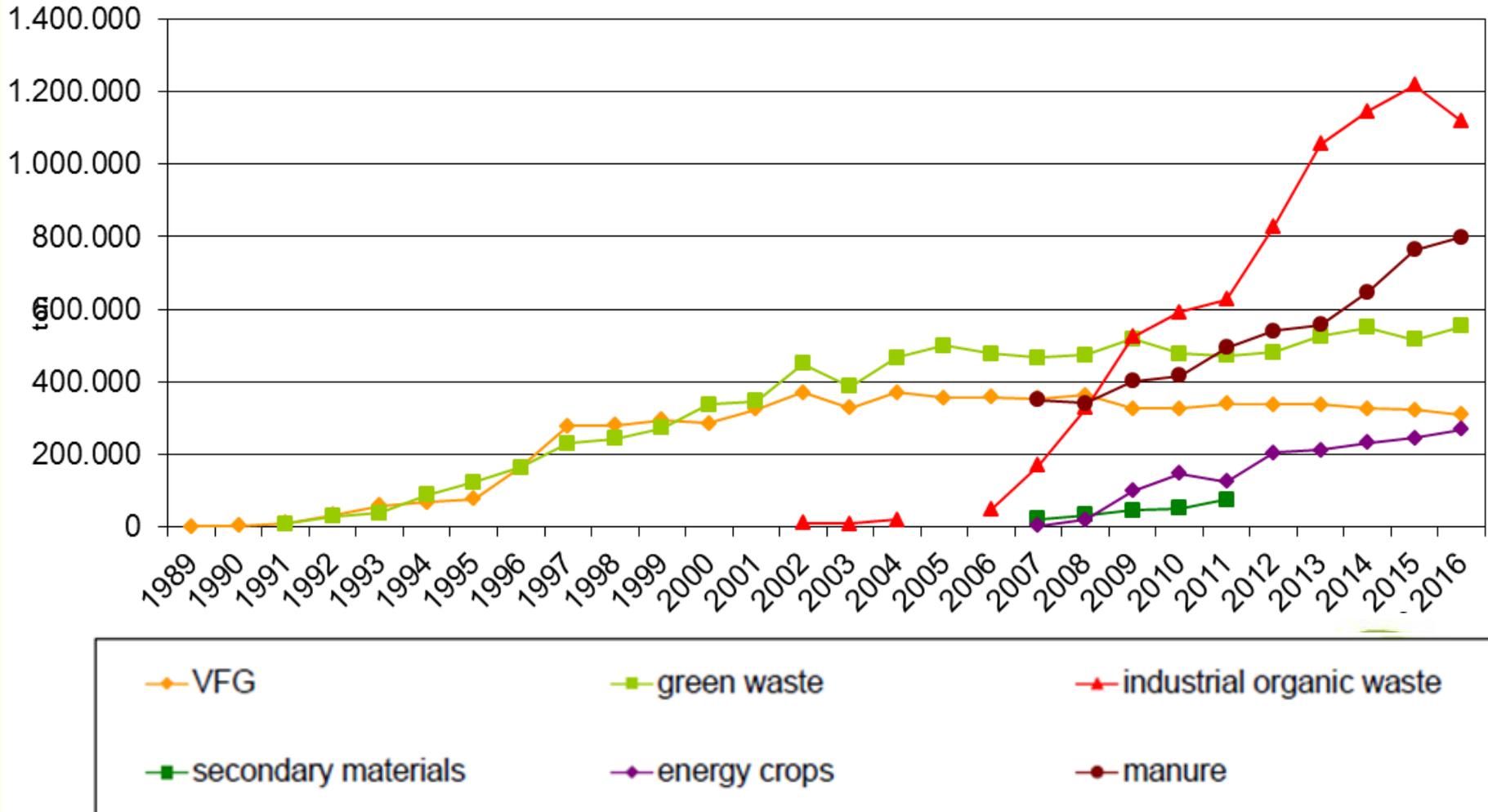
ESNI workshop 22.01.2019



VLACO npo



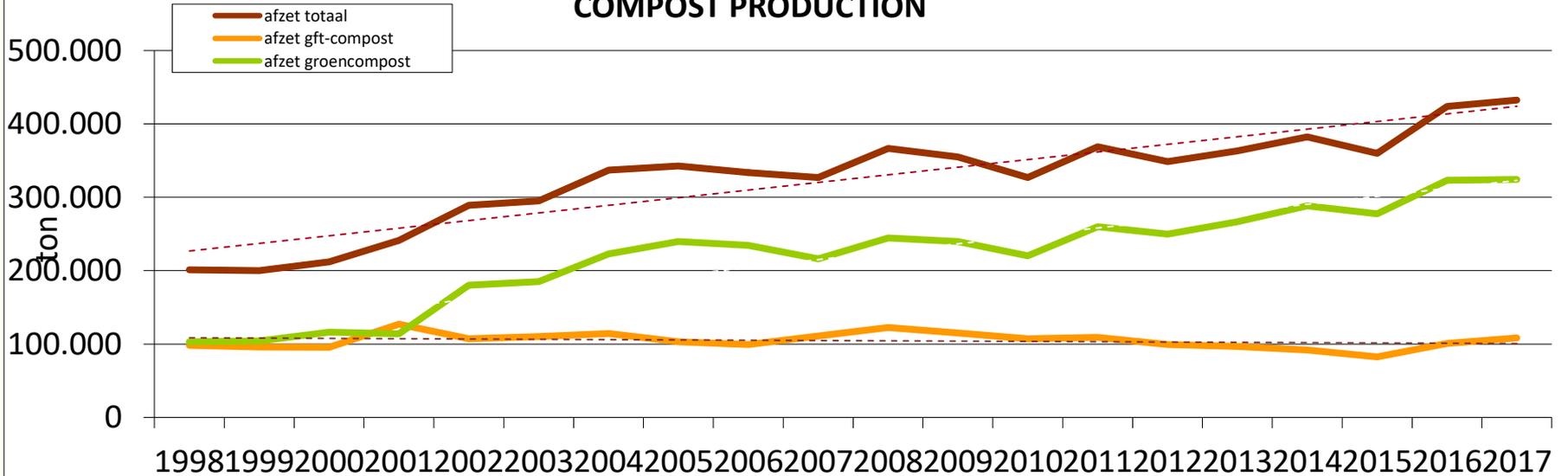
- ✓ Flemish Compost and Digestate Quality Organisation (°'92)
- ✓ More than 100 members in mgt. (3) of organic waste (green,



VLACO npo (compost & digestate)

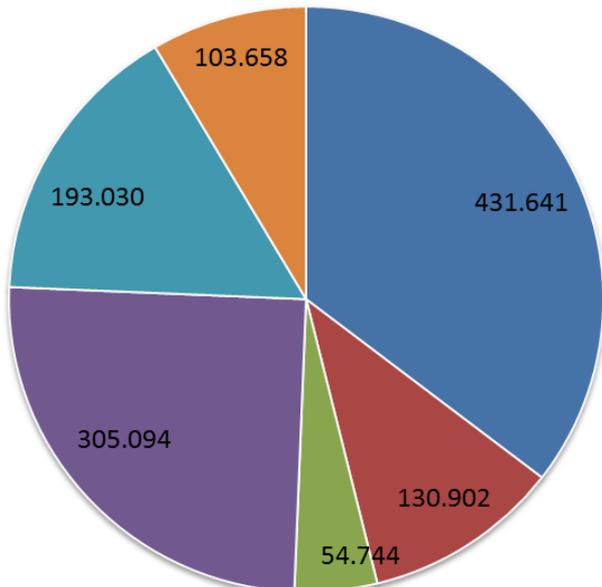


COMPOST PRODUCTION



DIGESTATE PRODUCTION

- Ruw digestaat
- Dikke fractie digestaat
- Gedroogd digestaat
- (Ingedikte) dunne fractie digestaat
- Effluent van dunne fractie digestaat
- Concentraat na filtratie dunne fractie digestaat



VLACO npo (compost & digestate)



- ✓ Flemish Compost and Digestate Quality Organisation ('92)
- ✓ More than 100 members in mgt. (3) of organic waste (green, vfg, industrial) : Flemish gvt & other public and private stakeholder (treatment plants)
- ✓ Support & implement **biowaste policies** (Materials Decree,...)
- ✓ Focus
 - **Quality certification** (fertiliser, soil improver, substrates)
 - Closing the biological cycle (C and nutrients),
 - **Research/demo's**
- ✓ Wide **knowledge** of availability, the use, and benefits of composts and digestates
- ✓ Member of o.a. **ECN** and **EBA**



VLACO npo (compost & digestate)



- **NUTRIMAN: WP2-3-4-5-6**
- **WP2:** collection & provision of innovative ready for market N/P recovery techn. & products

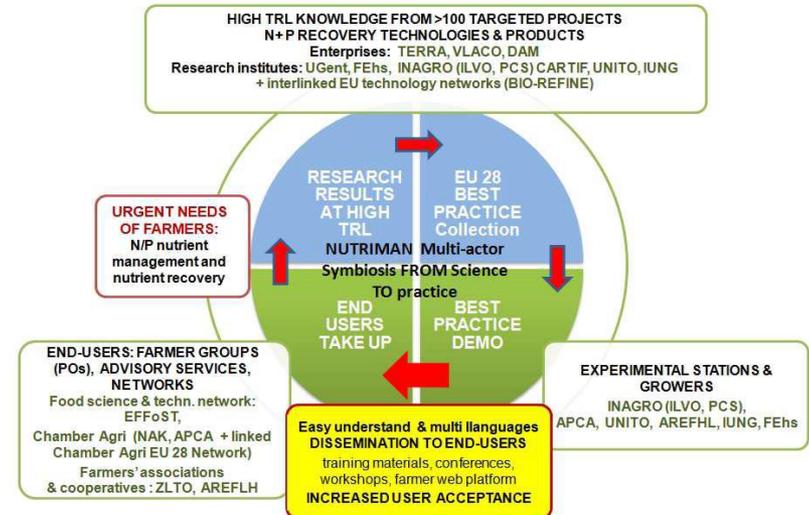


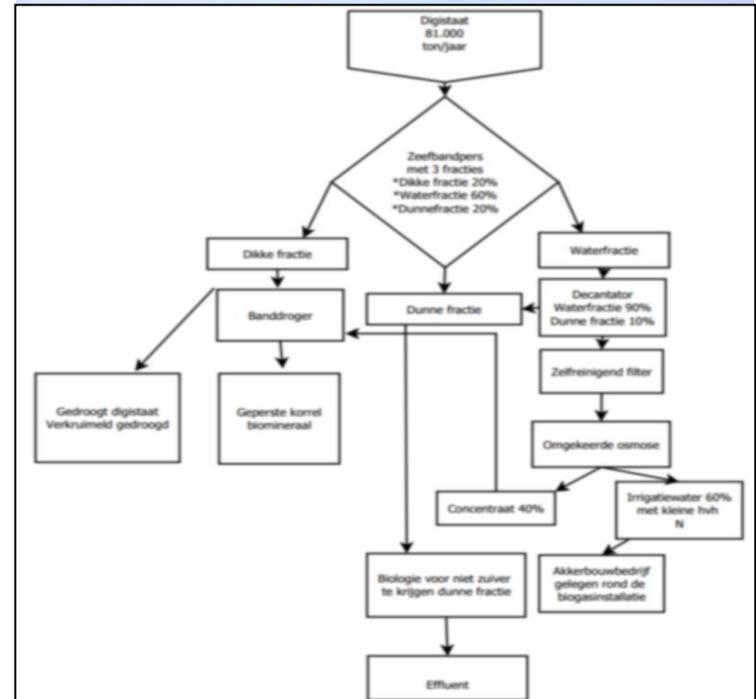
Figure 1.1. NUTRIMAN Multi-actor Symbiosis concept and practical information flow FROM Science TO practice

- **Case: NPirriK**
 - Vlaanderen Circulair project
 - Investment aid (2017)
 - **Improved digestate post-treatment**
 - Biogas plant ARBIO (Arendonk (B))



Case NPIRRIK (digestate)

- Capacity:
 - 35 kton org waste + 55 Kton manure
 - 3,5 MWe
 - 81.000 ton digestate
- Innovated post-treatment cascade
 - Separation solid/liquid (centrifuge)
 - Biology (°effluent)
 - Belt filter press
 - Reverse osmosis (Turbin)
 - Backmix (Dorset GP) + belt dryer + pellet press





Case NPIRRIK (digestate)

- Innovated post-treatment cascade
 - improved recovery
 - **P recovery** into solid fraction + improved **N recovery** (reduced flows biology/reduced N-loss) + concentrate (**N**) **integrated into drying of solid fraction** + less **polymer** use required
 - 3 innovative end products:
 - **dried digestate (pellet) with higher N/P-ratio: 4/3 : 5000 ton/y (80-90% DW)**
 - low salinity **effluent**
 - **water** (dischargeable in surface water /for irrigation of nearby fields)





Case NPIRRIK (digestate)

- Costs (VEA – 2,8 MWe)
 - CAPEX
 - 3.800 €/kWe (average biogas installation incl basic post-treatments incl separation & drying)
 - ..
 - Belt filter press: 75.000 à 150.000 €
 - RO: 200.000 €
 - Backmix: 35.000 €
 - Belt dryer: 400.000 à 800.000 €
 - OPEX
 - 423 €/kWe
 - Input: organic waste streams: 15 à 25 €/T &
 - Output:
 - Liquid fraction digestate: 5 €/ton





Case NPIRRIK (digestate)

- Revenues (VEA)
 - Net electricity generated/heat usefully utilized
 - Net electricity injected x marketprice electricity: 56 €/MWh (12 month average (Belpex):
 - GSC: 93€/MWh (min) (x bf)
 - WKC: 35 €/MWh (x bf)
 - Inputs
 - manure: -5 €/T
 - Outputs
 - Dried digestate: up to 25 €/ton (only if high DW %)
vs
 - Improved dried digestate (pellets): trader promises double price for double N content \approx 45 €/ton





Thank you for your attention

christophe.boogaerts@vlaco.be

015/451.369

www.vlaco.be

