



UnitelmaSapienza

Università degli Studi di Roma



International outlook with short reports from India, **Italy**, South Africa, Cuba, Brazil

PIERGIUSEPPE MORONE

UNITELMA SAPIENZA, UNIVERSITY OF ROME

BIOGAS RESEARCH CENTER CONFERENCE

JUNE 4TH 2020 – ON LINE MEETING



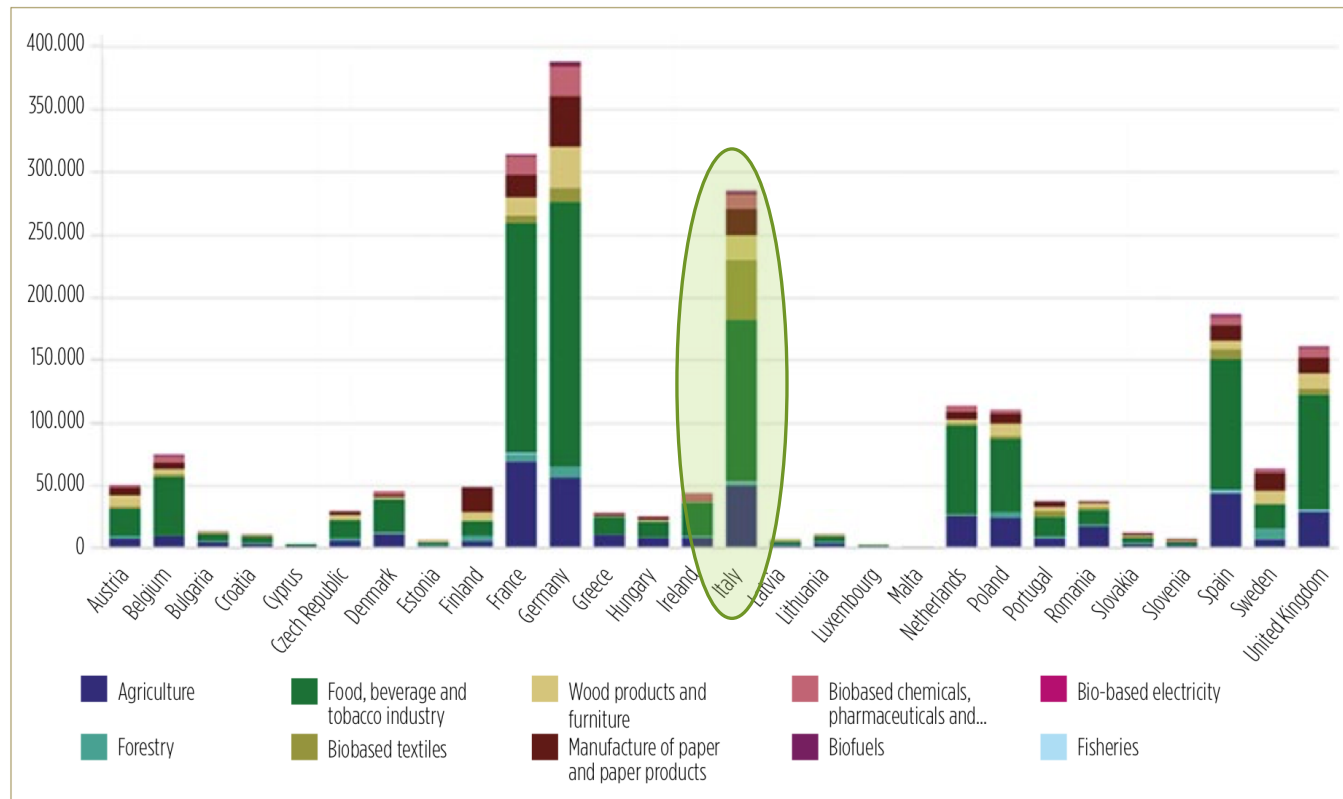
Talk outline

- ✓ EU and Italian scenario: New momentum for the circular bioeconomy, Push towards green finance, Environmentally Harmful Subsidies
- ✓ Social and policy context: non-technological barriers
- ✓ Case study: a focus on RES-T
- ✓ Policy implications

Talk outline

- ✓ EU and Italian scenario: New momentum for the circular bioeconomy economy, Push towards green finance, Environmentally Harmful Subsidies
- ✓ Social and policy context: non-technological barriers
- ✓ Case study: a focus on RES-T
- ✓ Policy implications

EU and Italian scenario

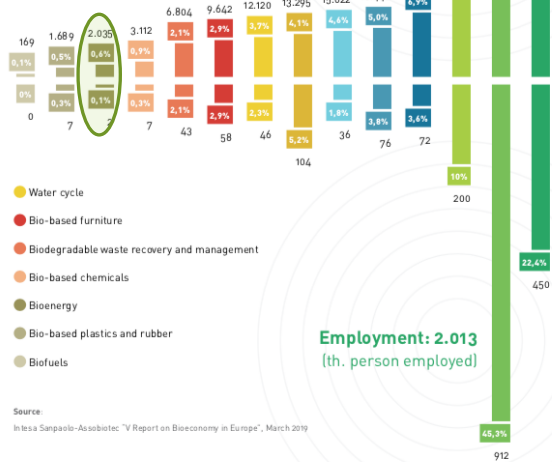


European bioeconomy turnover in millions of euros - per country and per production sector

EU and Italian scenario

1 Bioeconomy in Italy in 2017

- Food industries, beverages and tobacco
- Agriculture, forestry, fisheries and aquaculture
- Bio-based apparel
- Paper industry
- Bio-based textiles
- Bio-based pharmaceutical
- Wood industry



3 Biorefineries: industrial plants and flagships



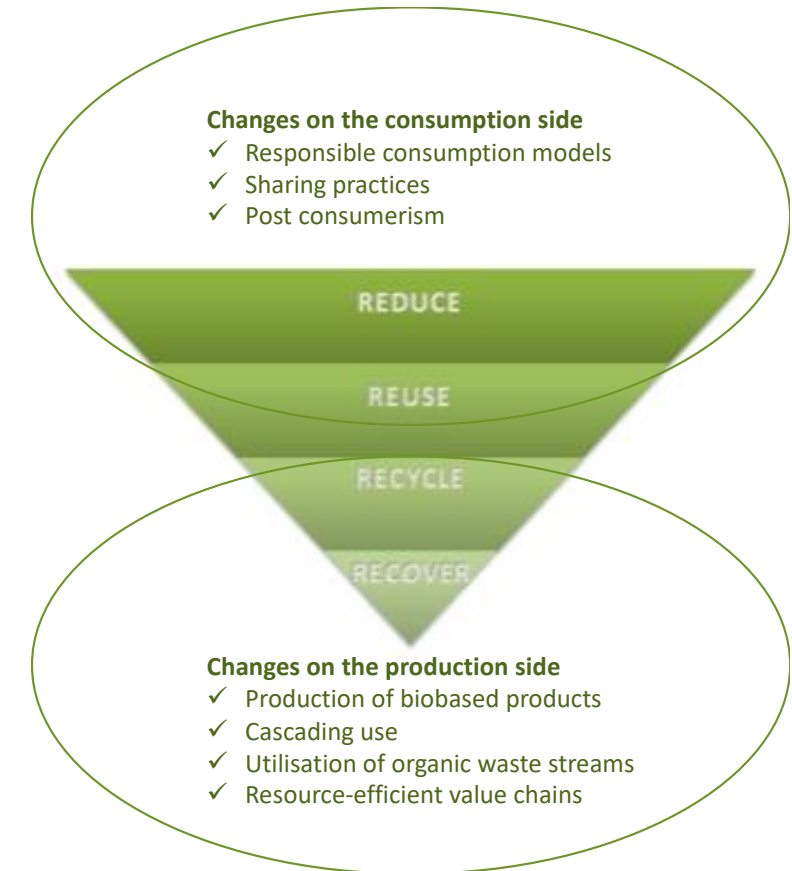
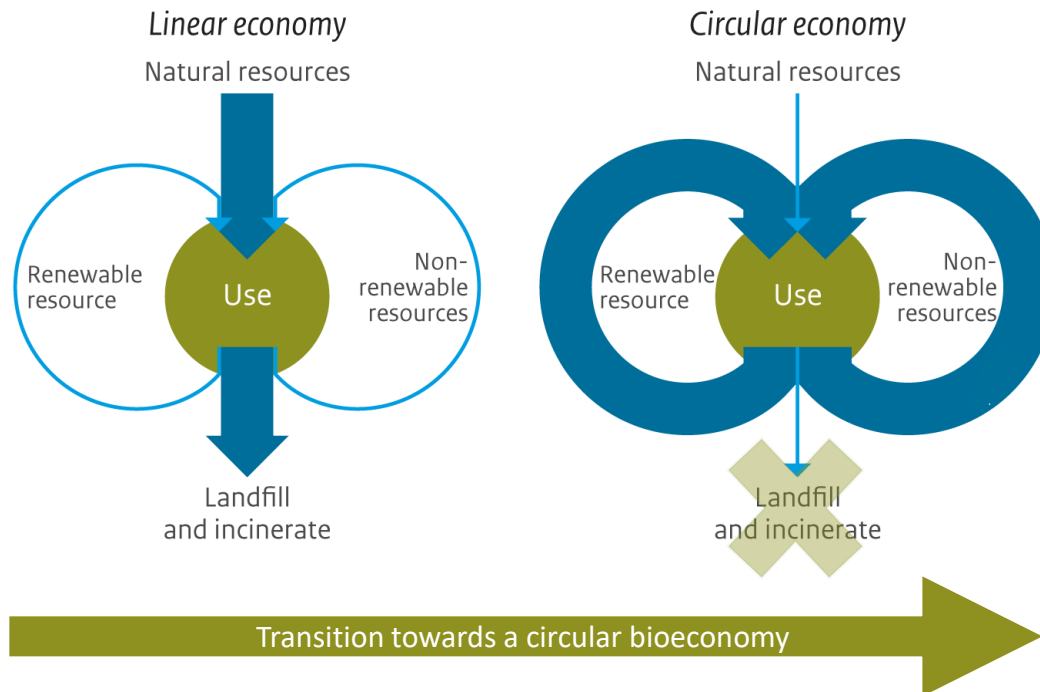
4 Biobased R&D centres, pilot plants, demo plants and experimental fields



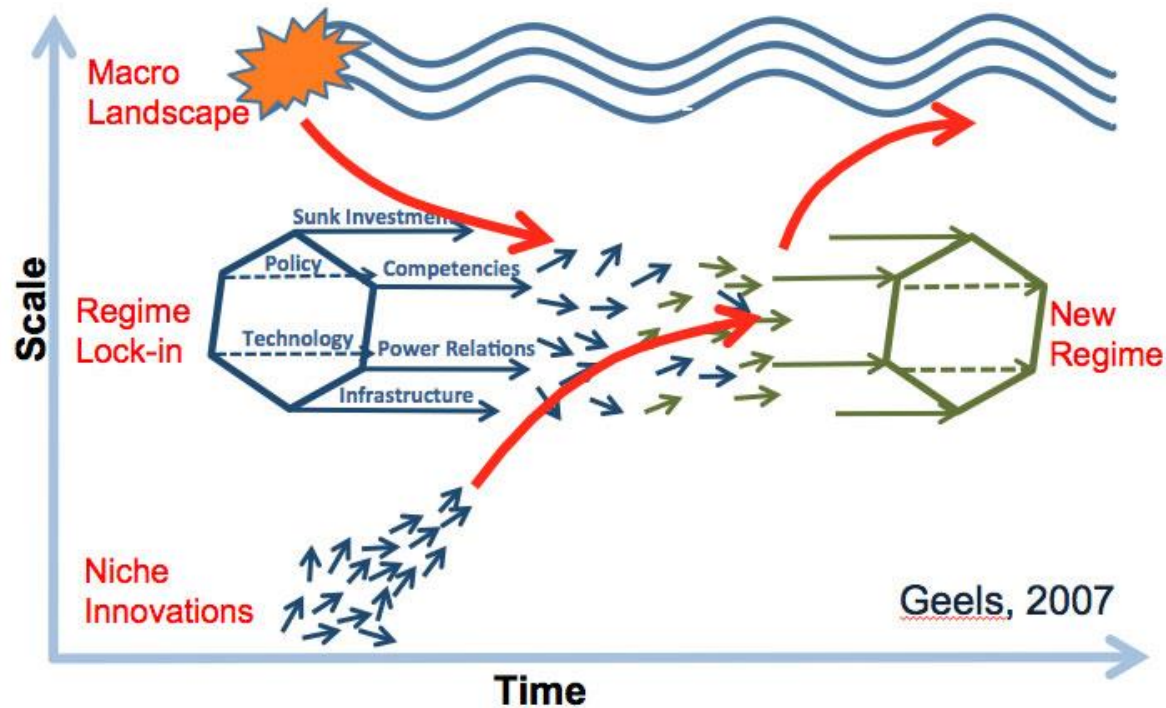
EU and Italian scenario

New momentum for the circular economy

From a linear to a circular bioeconomy



EU and Italian scenario



Policy sources of pressure (some examples):

- ✓ Push towards green finance
- ✓ Environmentally Harmful Subsidies

Talk outline

- ✓ EU and Italian scenario: new momentum for the circular bioeconomy, push towards green finance, Environmentally Harmful Subsidies
- ✓ Social and policy context: non-technological barriers
- ✓ Case study: a focus on RES-T
- ✓ Policy implications

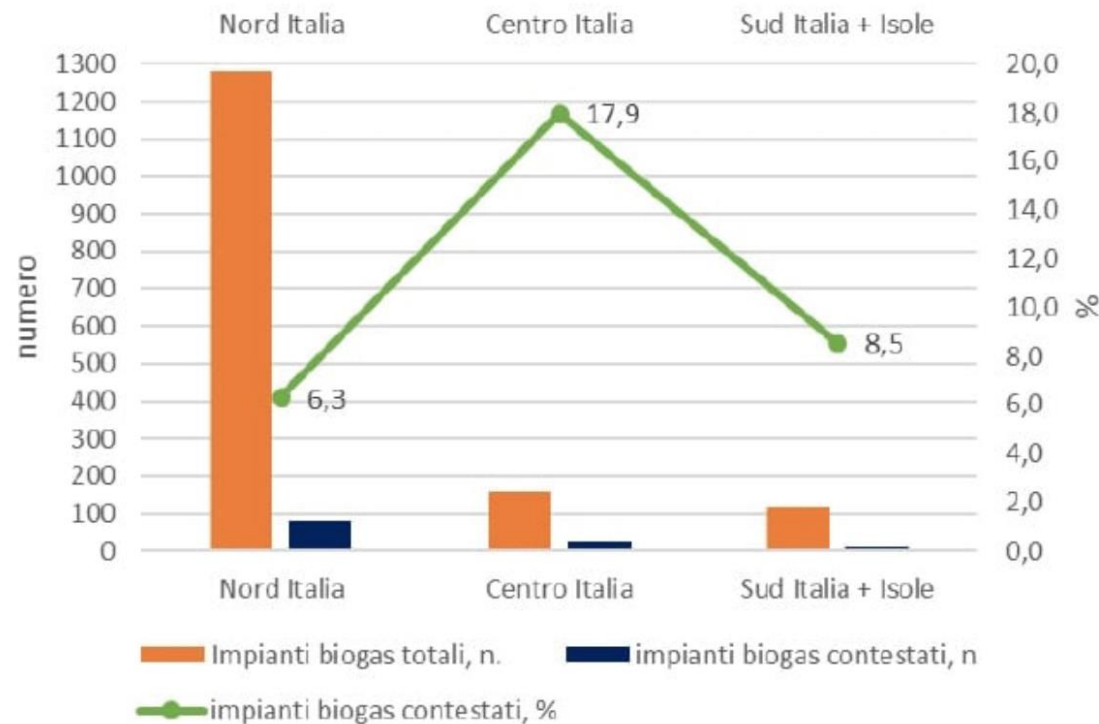
Social and policy context: non-technological barriers



Factors that limit social acceptance:

- Food vs. Energy crops debate
- Direct and indirect land use change
- Biodiversity
- End-of-waste legislation

Social and policy context: non-technological barriers



Factors that most worry the local population:

- Bad smell coming from the plants or from poorly managed fertilizers
- Possible consequences to human health
- Heavier traffic in the areas where the plants in question are present

Talk outline

- ✓ EU and Italian scenario: new momentum for the circular bioeconomy, push towards green finance, Environmentally Harmful Subsidies
- ✓ Social and policy context: non-technological barriers
- ✓ Case study: a focus on RES-T
- ✓ Policy implications

Case study: a focus on RES-T

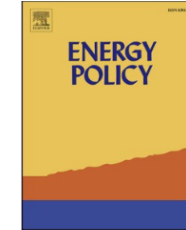
Energy Policy 138 (2020) 111220



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Energy Policy

journal homepage: <http://www.elsevier.com/locate/enpol>



RES-T trajectories and an integrated SWOT-AHP analysis for biomethane.
Policy implications to support a green revolution in European transport

Idiano D'Adamo ^{a,b,*}, Pasquale Marcello Falcone ^b, Massimo Gastaldi ^a, Piergiuseppe Morone ^b

^a Department of Industrial Engineering, Information and Economics, University of L'Aquila, Via G. Gronchi 18, 67100, L'Aquila, Italy

^b Department of Law and Economics, Unitelma Sapienza – University of Rome, Viale Regina Elena 295, 00161, Roma, Italy

Case study: a focus on RES-T

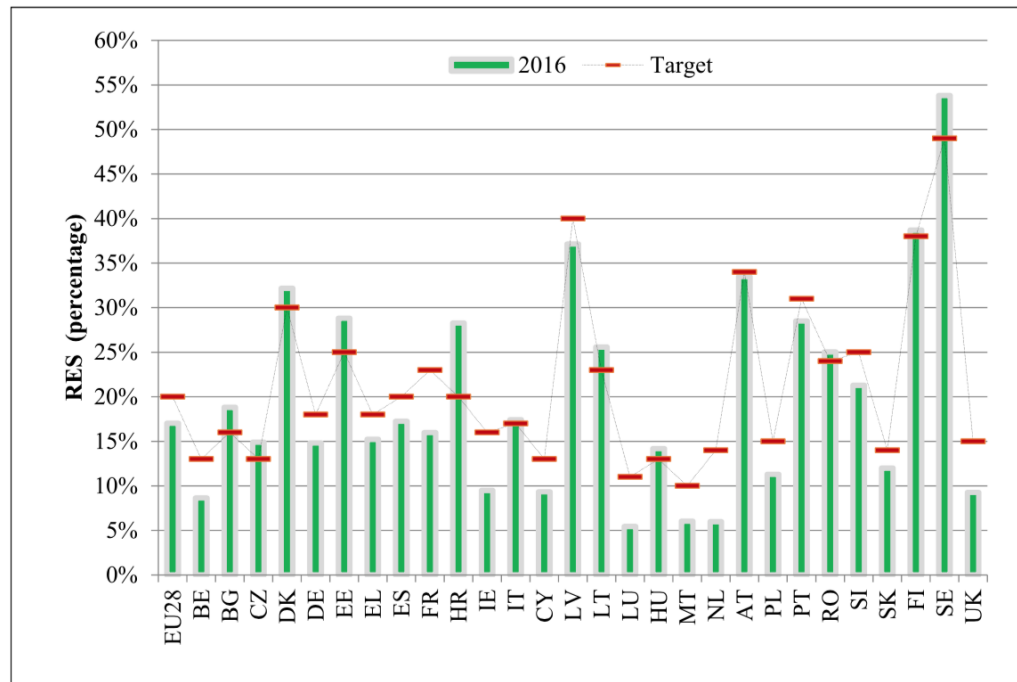


Fig. 3. RES share in 2016 (Eurostat, 2018).

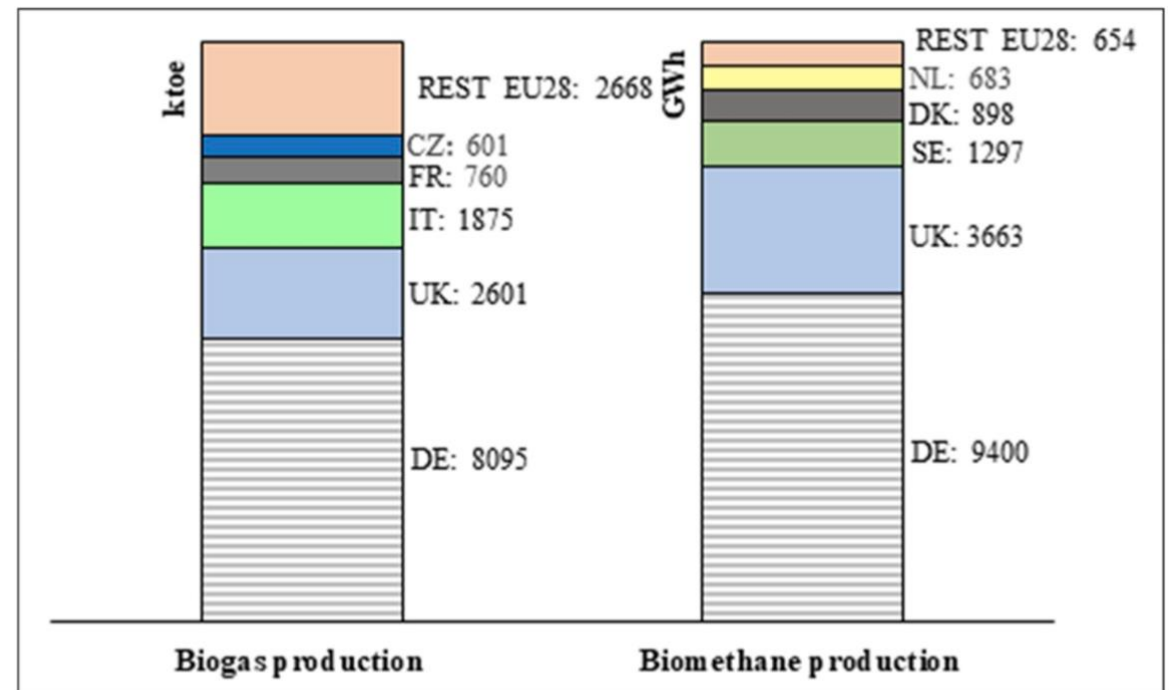
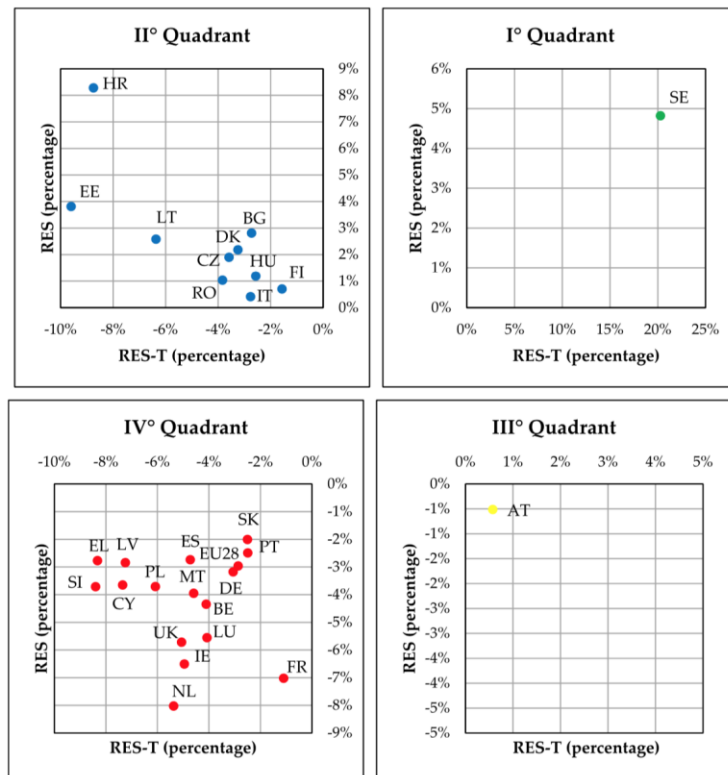


Fig. 1. Top five countries in terms of biogas-biomethane production in 2016 (European Biogas Association, 2017).

Case study: a focus on RES-T



RES-diagram allows distributing MS in four quadrants:

- I Quadrant includes MSs that had reached both 2020 targets.
- II Quadrant includes MSs that had achieved only the 2020 RES target.
- III Quadrant includes MSs that had reached only the 2020 RES-T target.
- IV Quadrant includes MSs that had not met either 2020 target.

Case study: methodology

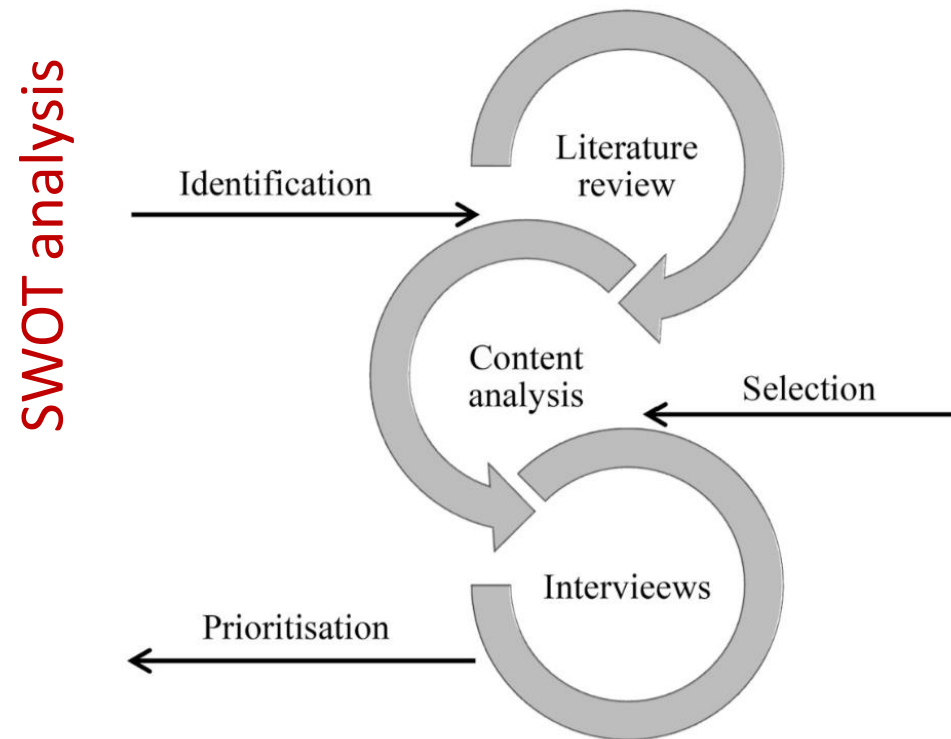


Fig. 4. Methodological steps for the SWOT-AHP.

Analytic Hierarchy Process

We produced a list of priorities through pairwise comparisons, based on expert judgements.

We conducted a survey among 20 experts from 18 MSs through Skype video calls, over the period September - December 2018.

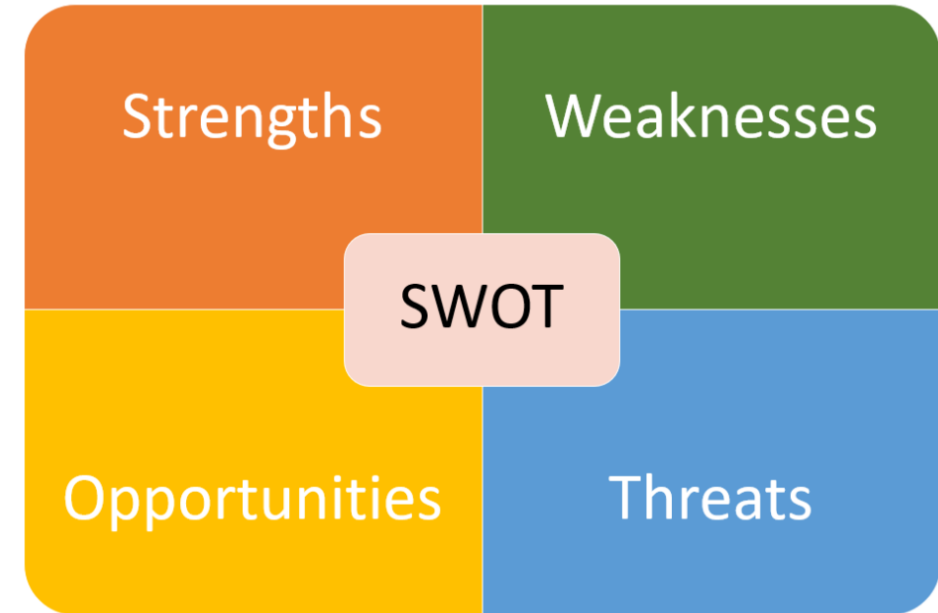
Each interview took, on average, 1 h.

Experts were recruited from the European Biogas Association (EBA)

Case study: methodology

Selection of SWOT factors.

Strengths		Source
S1	Number of actors involved	Ammenberg et al. (2018)
S2	Utilisation of available resources	Brudermann et al. (2015)
S3	Technical requirements well-known	Clancy et al. (2018)
S4	Recovery/selling of additional products	Hao et al. (2018)
S5	Additional source of income	Brudermann et al. (2015)
Weaknesses		
W1	Quality of technical parameters	Brudermann et al. (2015)
W2	Low financial strength of small plants	Brudermann et al. (2015)
W3	Lack of awareness	Herbes et al. (2018)
W4	Uncertainty of subsidies	Chan Gutiérrez et al. (2018)
W5	Inadequate raw material	Ardolino et al. (2018)
Opportunities		
O1	Can be blended with natural gas	Scarlat et al. (2018b)
O2	Reduced dependency on energy imports	Brudermann et al. (2015)
O3	Targets/constraints to reach	Veum and Bauknecht (2019)
O4	Climate change	Brudermann et al. (2015)
O5	Multi-functionality of biomethane	Brudermann et al. (2015)
Threats		
T1	Potential dilemma with other RES	Daniel-Gromke et al. (2018)
T2	Low social acceptance	Brudermann et al. (2015)
T3	Schemes time-limited	Horschig et al. (2019)
T4	Food vs. fuel dilemma	Brudermann et al. (2015)
T5	Feed-in-tariff depends on policy	Brudermann et al. (2015)



Case study: results

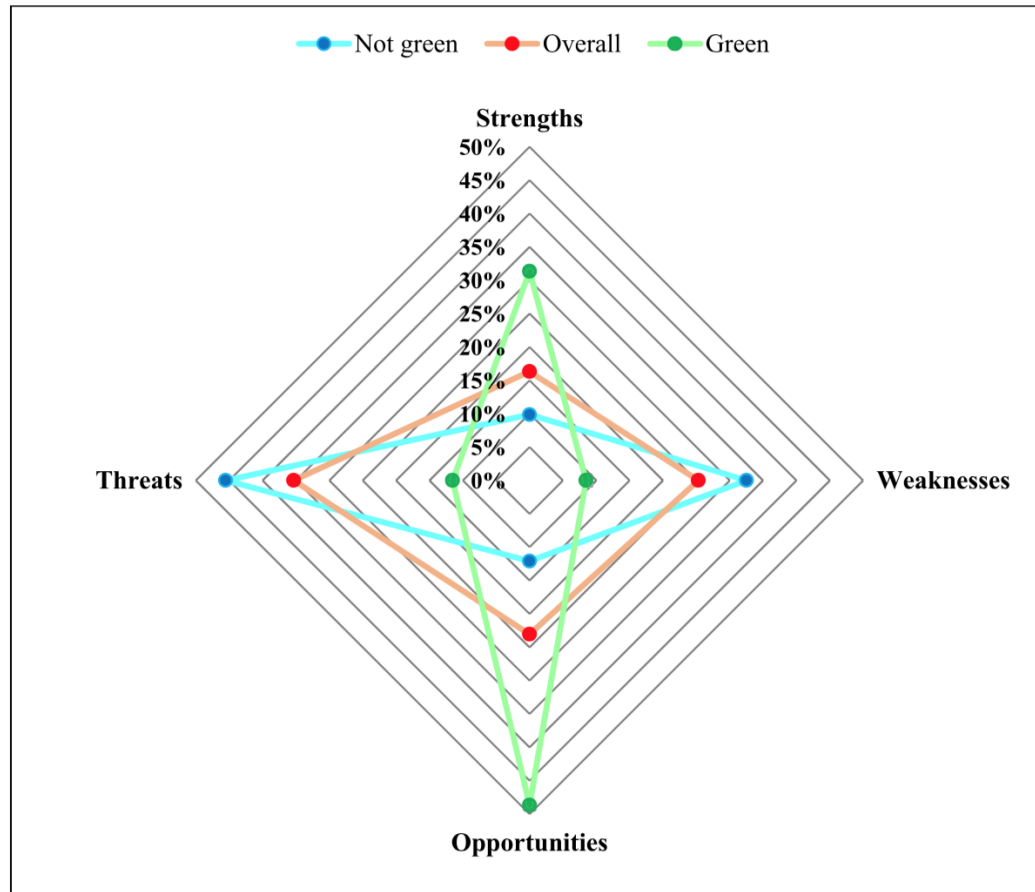


Fig. 8. Group priority.

Six interviewees from “green” countries in the transport sector (e.g. Sweden, Austria, Finland and France) assigned approximately half of the relevance (48.7%) to *opportunities*. In addition, they gave *opportunities* and *strengths* a combined value of 80%

Fourteen interviewees from “not green” countries in the transport sector assigned the highest weight (45.5%) to *threats*. They gave *threats* and *weaknesses* a combined value of 78%

Talk outline

- ✓ EU and Italian scenario: new momentum for the circular bioeconomy, push towards green finance, Environmentally Harmful Subsidies
- ✓ Social and policy context: non-technological barriers
- ✓ Case study: a focus on RES-T
- ✓ Policy implications

Policy implications 1 - Incentive scheme (subsidies) in the biogas-biomethane market

The **value** of subsidies should be calculated considering two main variables:

- i) Biomethane production cost
- ii) Market price of natural gas

The **duration** of the subsidies should be associated with the lifetime of a plant, and should be carefully defined to reduce the probability of distortions.

Policy implications 2 - Satisfying sustainability criteria

- Food vs. fuel and the associated (direct and in- direct) land use change issues were perceived as extremely relevant and should thus be taken into consideration in any new incentive scheme.
- Need to focus on local development through the promotion of a short supply chain based on the development of (many new) small plants.

תודה
Dankie Gracias
Спасибо شكراً
Merci Takk
Köszönjük Terima kasih
Grazie Dziękujemy Děkojame
Ďakujeme Vielen Dank Paldies
Kiitos Tänname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας Ευχαριστούμ 감사합니다
ขอบคุณ
Bedankt Děkujeme vám
ありがとうございます
Tack