



LIFE 15 IPE IT 013



“GESTIONE E TRACCIABILITA’ DEI FLUSSI DI BIOMASSA LEGNOSA”

Domenico Vito

Fondazione Lombardia Ambiente

Verona (VR), 21/02/2020



L'inquinamento

Inquinamento : Alterazione o contaminazione di un qualsiasi materiale o ambiente ad opera di agenti inorganici od organici (scarichi, rifiuti, ecc.) o di batteri, derivanti dalle varie attività umane, produttive o stanziali: i. ambientale; i. atmosferico; i. delle acque, del suolo; i. acustico.

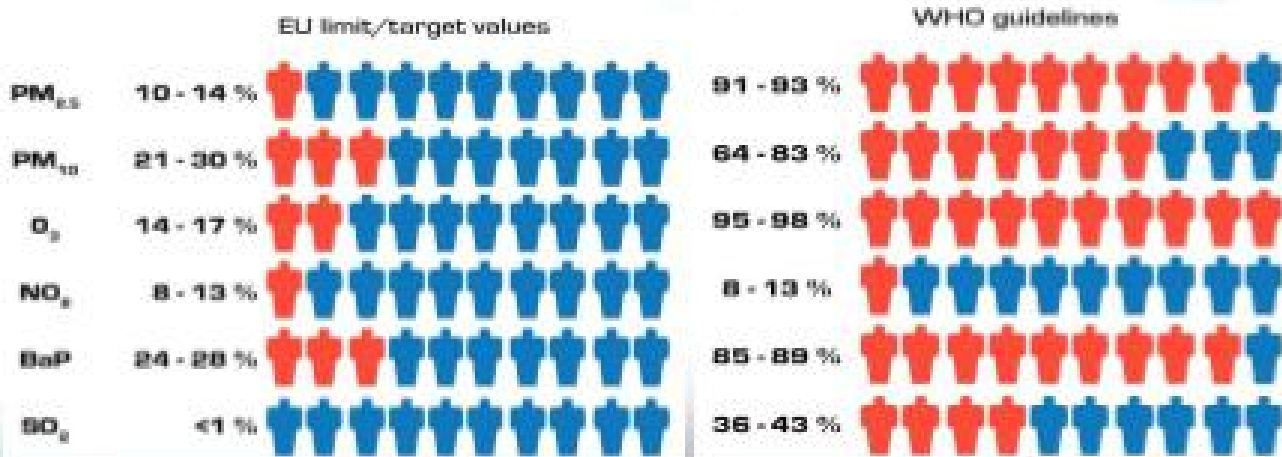
Inquinamento atmosferico: è l'alterazione delle condizioni naturali dell'aria, dovuta alle emissioni dei gas di scarico di autoveicoli, caldaie, centrali elettriche, fabbriche, impianti di incenerimento



Inquinamento atmosferico in Europa



Percentuale della popolazione residente in aree urbane dove la concentrazione degli inquinanti è più alta dei valori indicati dalla direttiva, 2002-2012 (EU-28)



Morti premature attribuite alla esposizione di PM_{2.5}, O₃ e NO₂, nel 2012 in 40 Paesi Europei

Country	PM _{2.5}	O ₃	NO ₂
Austria	6 100	229	660
Belgium	9 300	179	2 300
Bulgaria	14 100	500	700
Croatia	4 500	279	50
Cyprus	790	40	0
Czech Republic	10 400	180	290
Denmark	2 800	110	50
Estonia	420	30	0
Finland	1 900	60	0
France	43 400	1 500	7 700
Germany	59 500	2 100	10 400
Greece	11 100	280	1 300
Hungary	12 800	470	720
Ireland	1 200	30	0
Italy	59 500	3 000	31 600
Latvia	1 800	60	90
Lithuania	2 300	80	0
Luxembourg	250	10	60
Malta	200	30	0
Netherlands	10 100	200	2 800
Poland	44 600	1 100	1 600
Portugal	5 400	300	470
Romania	25 500	720	1 500
Slovakia	5 700	250	60
Slovenia	1 700	100	30
Spain	25 500	1 800	5 900
Sweden	3 700	160	10
United Kingdom	37 800	520	14 100

“

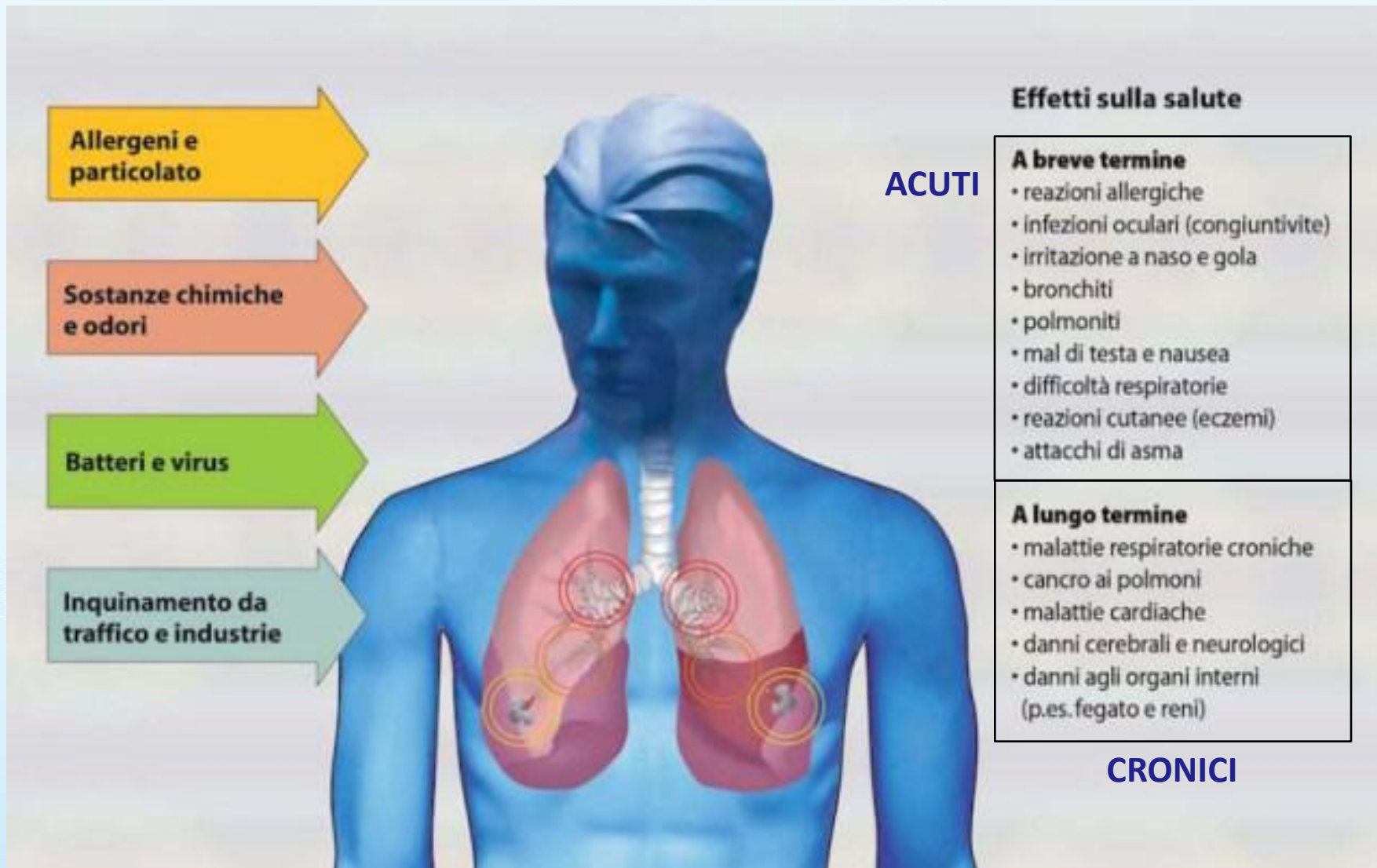
Despite continuous improvements in recent decades, air pollution is still affecting the general health of Europeans, reducing their quality of life and life expectancy.

”

Air quality in Europe 2015 report, European Environment Agency, EEA Executive Director Hans Bruyninckx

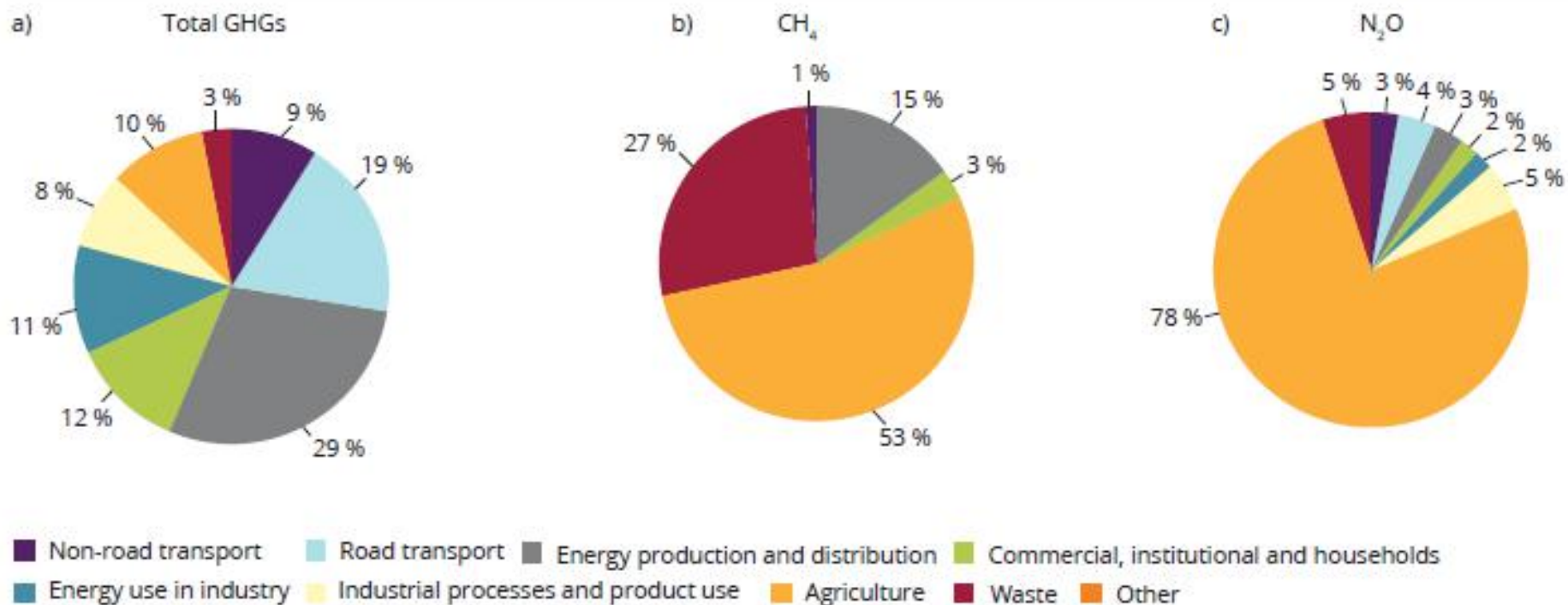
Air quality in Europe 2015 report, European Environment Agency

Effetti sulla salute



Inquinanti atmosferici & Cause

Figure 3.2 Sectoral contribution to the total EU-28 emissions in 2015: (a) GHGs (CO₂-eq), (b) CH₄, and (c) N₂O



Source: EEA, 2017e.

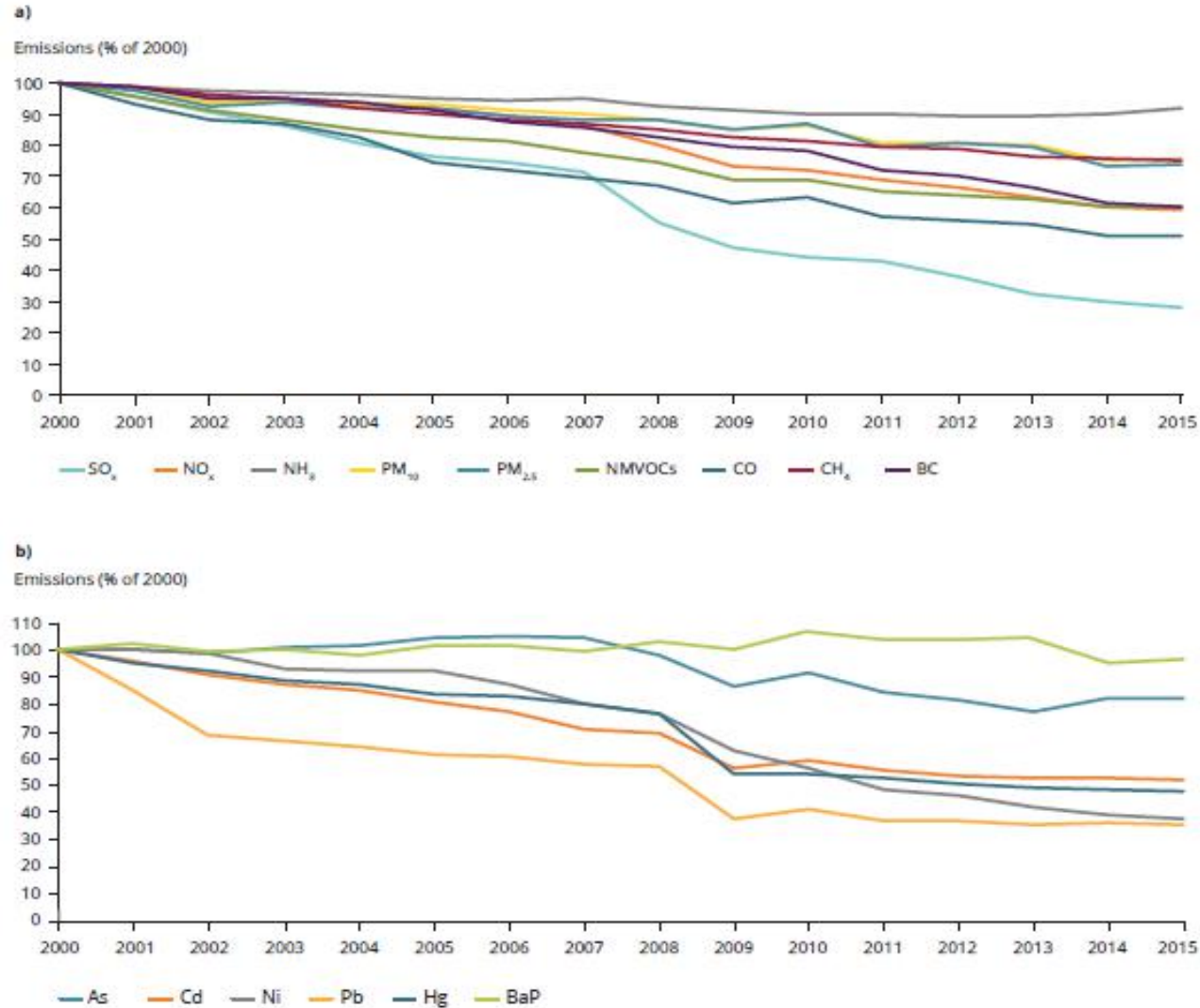


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Emission trend



Figure 2.1 Development in EU-28 emissions, 2000-2015 (% of 2000 levels): (*) SO_x, NO_x, NH₃, PM₁₀, PM_{2.5}, NMVOCs, CO, CH₄ and BC; (b) As, Cd, Ni, Pb, Hg and BaP



Notes: CH₄ emissions are total emissions (Integrated Pollution Prevention and Control sectors 1-7) excluding sector 5: Land use, land-use change and forestry. The present emission inventories include only anthropogenic VOCs emissions. Under the CLRTAP Gothenburg Protocol, parties are encouraged to report emissions of BC, one of the constituents of PM. It means that reporting on BC emissions has been voluntary and has not been compulsory for every country.

Limiti Europei Qualità dell'aria

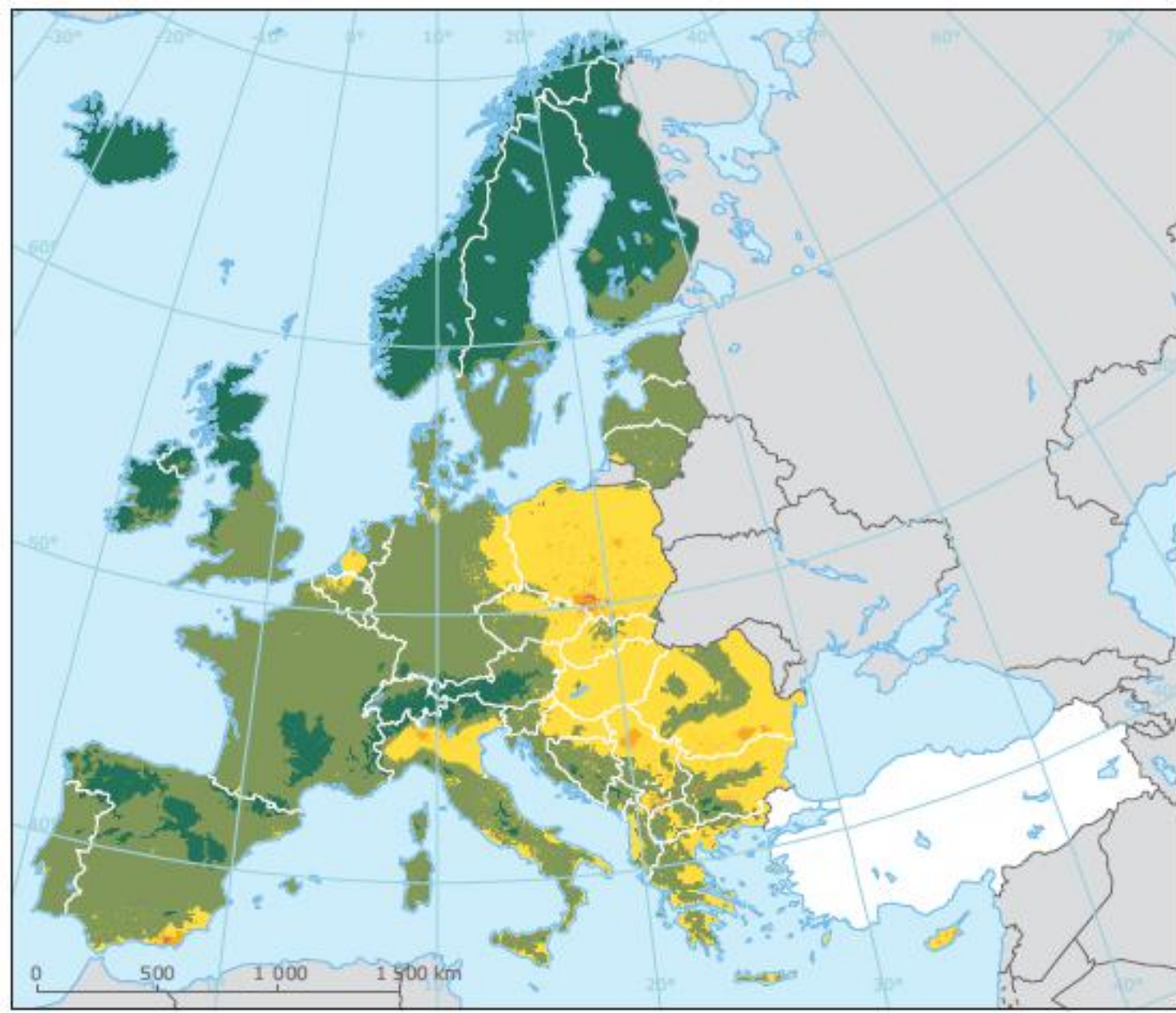
Table 4.1 Air quality standards for the protection of health, as given in the EU Ambient Air Quality Directives

Pollutant	Averaging period	Legal nature and concentration	Comments
PM ₁₀	1 day	Limit value: 50 µg/m ³	Not to be exceeded on more than 35 days per year
	Calendar year	Limit value: 40 µg/m ³	
PM _{2.5}	Calendar year	Limit value: 25 µg/m ³	Average Exposure Indicator (AEI) (*) in 2015 (2013-2015 average)
		Exposure concentration obligation: 20 µg/m ³ National Exposure reduction target: 0-20 % reduction in exposure	
O ₃	Maximum daily 8-hour mean	Target value: 120 µg/m ³	Not to be exceeded on more than 25 days/year, averaged over 3 years (*)
		Long term objective: 120 µg/m ³	
	1 hour	Information threshold: 180 µg/m ³ Alert threshold: 240 µg/m ³	
NO ₂	1 hour	Limit value: 200 µg/m ³	Not to be exceeded on more than 18 hours per year
		Alert threshold: 400 µg/m ³	To be measured over 3 consecutive hours over 100 km ² or an entire zone
	Calendar year	Limit value: 40 µg/m ³	
BaP	Calendar year	Target value: 1 ng/m ³	Measured as content in PM ₁₀
SO ₂	1 hour	Limit value: 350 µg/m ³	Not to be exceeded on more than 24 hours per year
		Alert threshold: 500 µg/m ³	To be measured over 3 consecutive hours over 100 km ² or an entire zone
	1 day	Limit value: 125 µg/m ³	Not to be exceeded on more than 3 days per year
CO	Maximum daily 8-hour mean	Limit value: 10 mg/m ³	
C ₆ H ₆	Calendar year	Limit value: 5 µg/m ³	
Pb	Calendar year	Limit value: 0.5 µg/m ³	Measured as content in PM ₁₀
As	Calendar year	Target value: 6 ng/m ³	Measured as content in PM ₁₀
Cd	Calendar year	Target value: 5 ng/m ³	Measured as content in PM ₁₀
Ni	Calendar year	Target value: 20 ng/m ³	Measured as content in PM ₁₀



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Mappa Europea PM10 2014



PM₁₀ annual mean in 2014

µg/m³

- ≤ 10
- 10-20
- 20-30
- 30-40
- 40-50
- > 50

□ No available data
□ Countries/regions not included in the data exchange process

Cos'è l'energia?

ENERGIA

Capacità di compiere un lavoro

Indispensabili per gli esseri viventi

FONTI

FORME

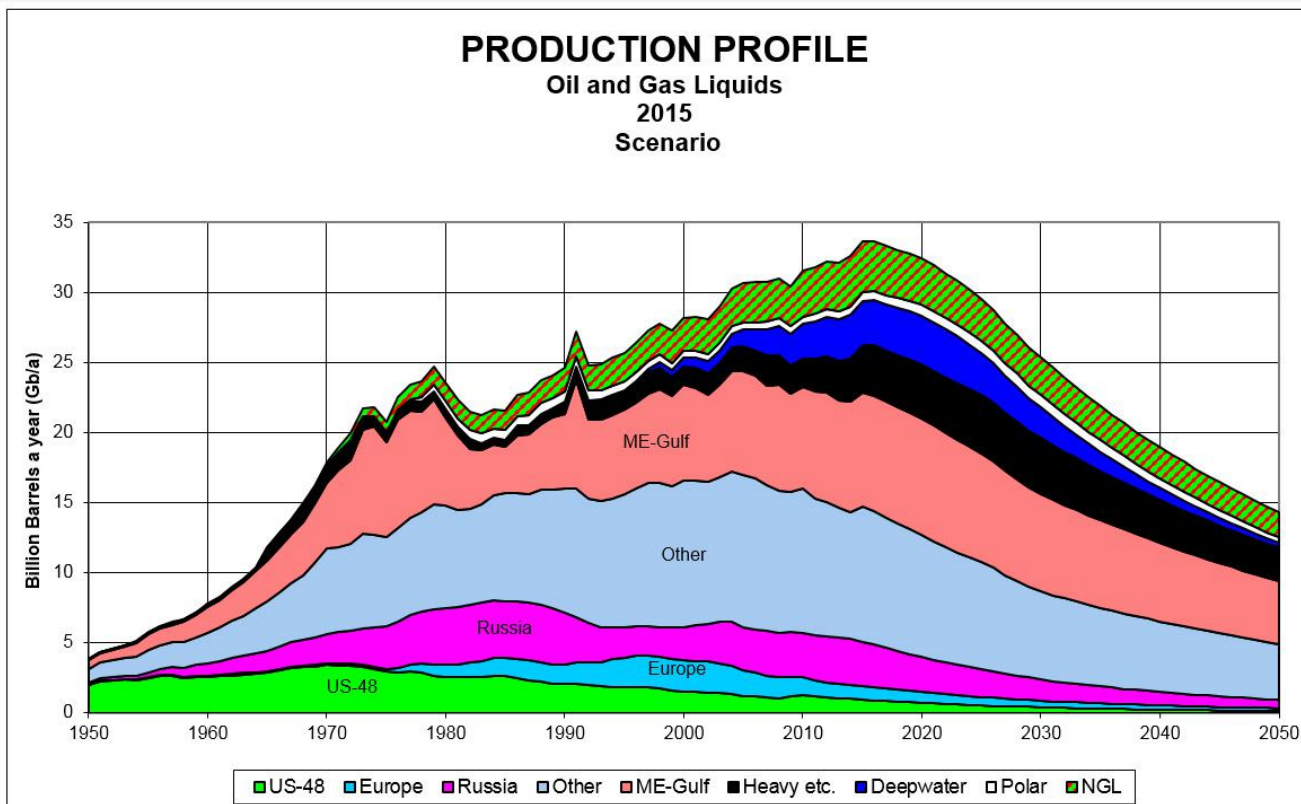
Non si crea, non si distrugge, ma si trasforma.

RINNOVABILI
Sole, acqua, fuoco, vento, geotermica, biomassa

NON RINNOVABILI
Combustibili fossili, petrolio, uranio, gas naturali, carbone

Eolica, idroelettrica, elettrica, potenziale, nucleare, meccanica, chimica, cinetica, termica, luminosa...

Per quanto tempo disporremo di fonti fossili?



Il “Peak oil” è il picco di consumo di fonti fossili previsto per ogni paese.

Le energie rinnovabili

Energia Solare



Energia Eolica



Energia Geotermica



Energia Biomassa



Energia Idroelettrica

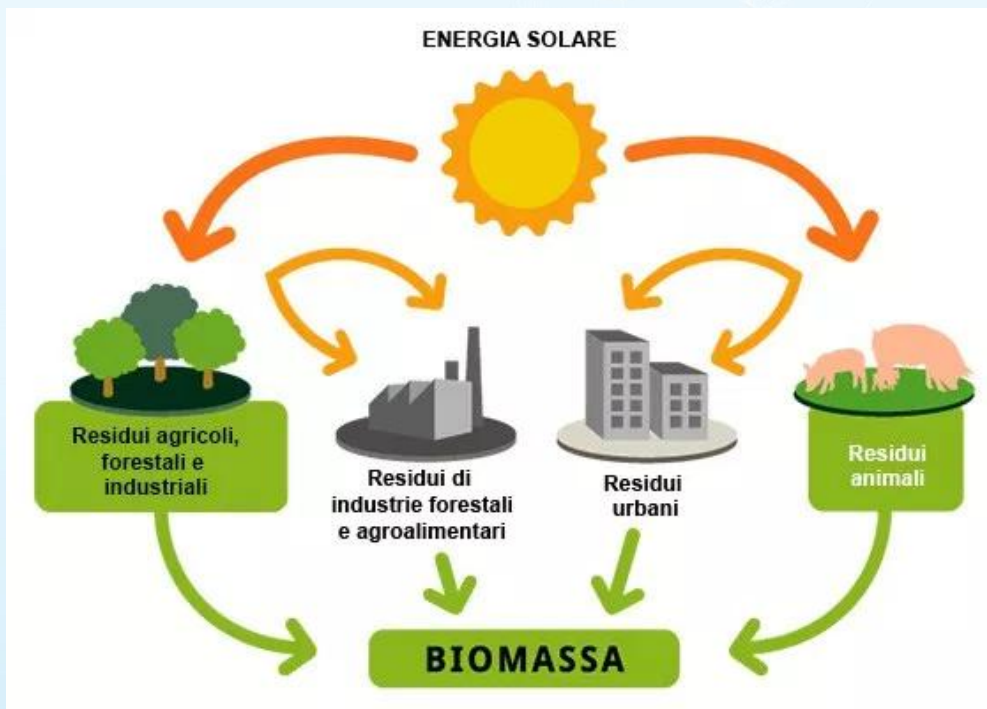


Energia Marina



Le biomasse

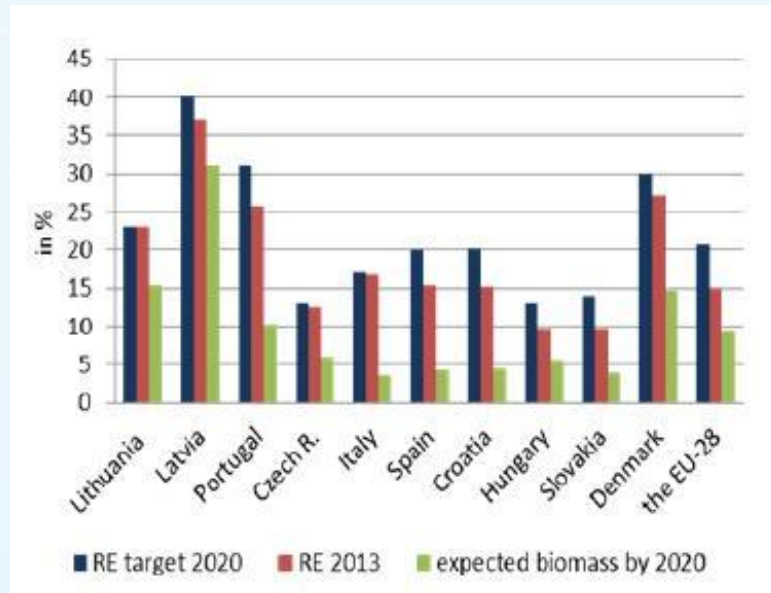
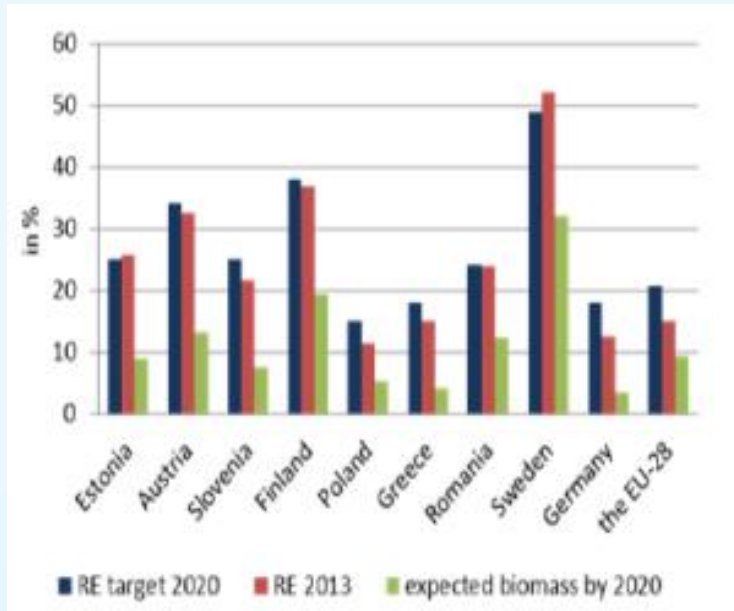
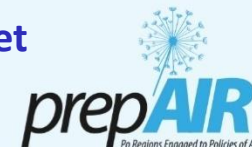
Le **biomasse**. Sono risorse organiche (biologiche) che possono essere utilizzate come **combustibili e/o carburanti**. Ad esempio, gli scarti della lavorazione agroalimentare possono essere impiegati come materia prima per produrre energia termica (calore).





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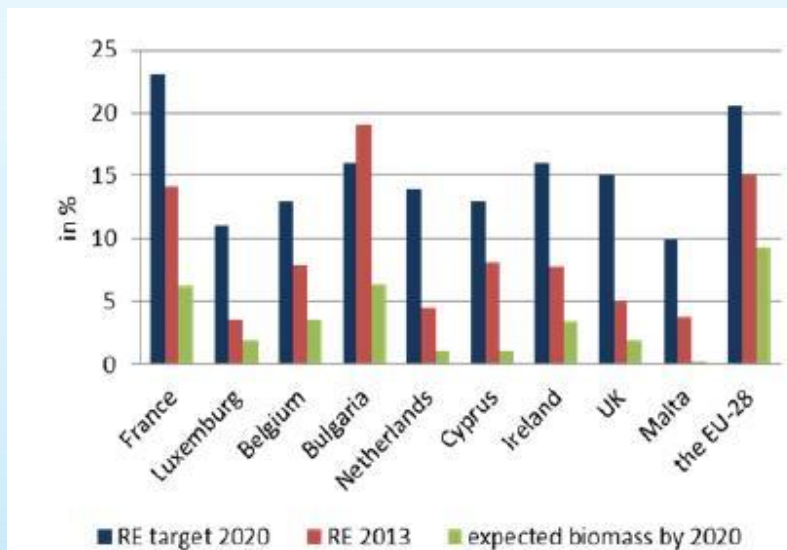
EU Scenario: “How are the EU members states contributing to the 27% target for EU’s renewable energy consumption – the role of woody biomass”



Leading

“How are the EU members states contributing to the 27% target for EU’s renewable energy consumption – the role of woody biomass”, S. Proskurina, R. Sikkema, J. Heinimö, E. Vakkilainen, presented at the 25th European Biomass Conference and Exhibition.

Intermediate



Lagging

Energie rinnovabili e inquinamento

Energia solare



Fonte:
Sole

Tecnologie:
Fotovoltaico,
solare termico



Applicazioni:
Energia elettrica,
riscaldamento e
raffrescamento

Energia eolica



Fonte:
Vento

Tecnologie:
Turbine eoliche



Applicazioni:
Energia elettrica

Energia marina



Fonte:
Onde, maree

Tecnologie:
Dighe,
centrali maremotrici



Applicazioni:
Energia elettrica

Energia idroelettrica



Fonte:
Corpi idrici

Tecnologie:
Centrale
idroelettrica



Applicazioni:
Energia elettrica

Energia geotermica



Fonte:
Terra

Tecnologie:
Pompe geotermiche
e pompe di calore



Applicazioni:
Energia elettrica,
riscaldamento e
raffrescamento

Bioenergia



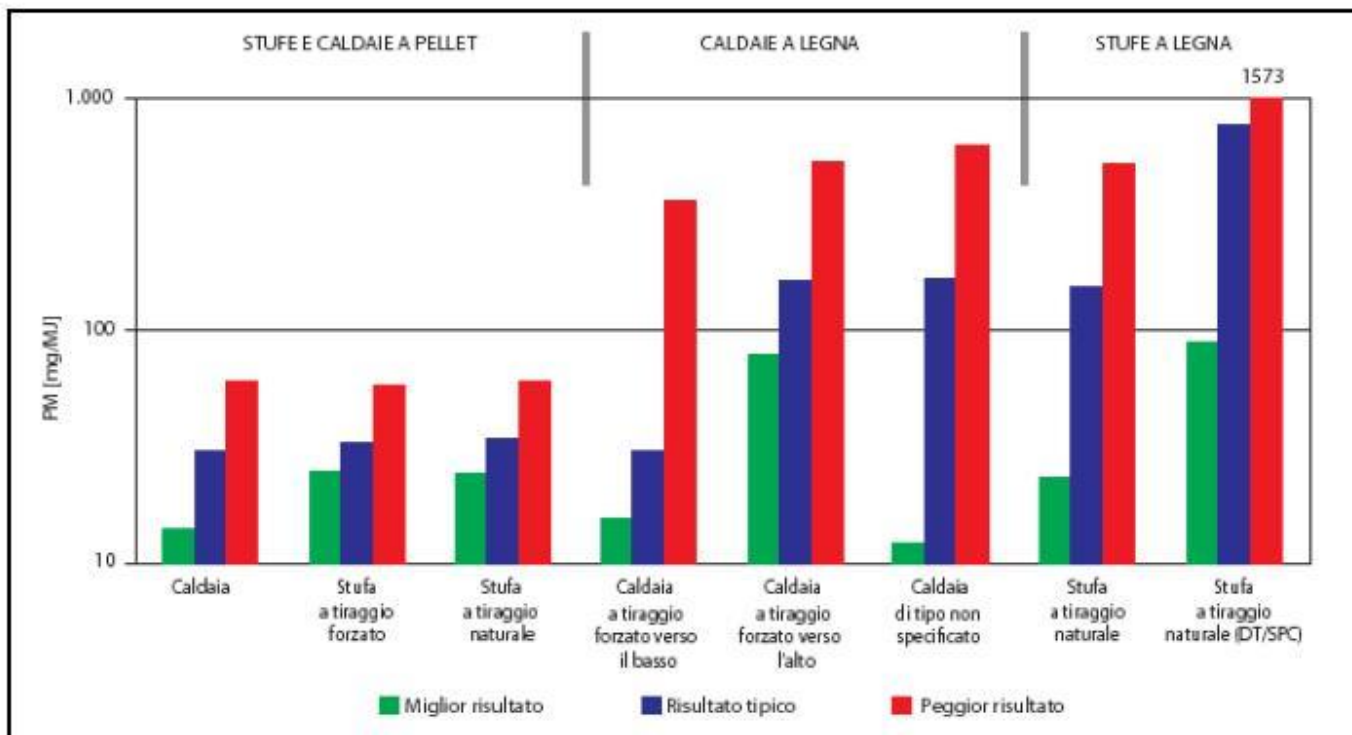
Fonte:
Biomassa, rifiuti

Tecnologie:
Combustione di
biomassa,
impianti a biogas
e iocarburenti

Applicazioni:
Energia elettrica,
riscaldamento e
raffrescamento,
trasporti

Le biomasse inquinano?

Figura 5.4: fattore di emissione medio, migliore e peggiore a confronto per alcuni tipi di apparecchi termici



Fonte: qualenergia.it



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Il progetto LIFE-IP PREPAIR

Po Regions Engaged to Policies of AIR

- **2 stati EU coinvolti:** ITALIA, SLOVENIA.
- **7 Distretti Amministrativi coinvolti :** Regioni Emilia Romagna, Piemonte, Lombardia, Veneto, Provincia Autonoma di Trento, Regione Autonoma Friuli Venezia Giulia, Regione Autonoma Valle d'Aosta, Slovenia
- **Expected end date:** 31/01/2024
- **Total Integrated Budget:** 16.805.939 €



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LIFE PREPAIR Project thematic pillars



In addition to the introduction of measures that various administrations of the Po basin introduced to reduce pollution due to the use of biomass, the LIFE PREPAIR project also defines specific actions on this important air pollution source.



AGRICULTURE

- Development of a common model for the assessment of ammonia emissions produced by farms, through a holistic approach that also includes odor and climate-altering emissions;
- Promotion of good practices for the use of fertilizers in order to optimize the application and reduce ammonia emissions, also through field analysis



WOODY BIOMASS

- Training and professional qualification for the design, maintenance and control of domestic biomass combustion plants
- Communication and awareness raising of citizens on the correct methods of combustion of biomass
- Optimization of local production chains and use of woody biomass



TRANSPORTS

Development of common tools for the promotion of public transport, cycling and electric mobility and for a rational management of freight transport, also through the implementation of demonstration actions



ENERGY EFFICIENCY

- Development of guidelines and training actions mainly dedicated to small and medium enterprises
- Development of an integrated approach for the training of all the actors involved in the chain of buildings
- Creation of regional info-points to support local authorities to facilitate access to energy efficiency initiatives and promote the spread of green purchases



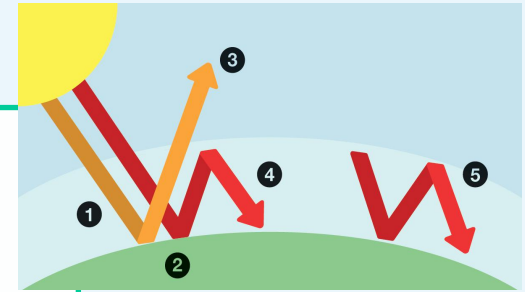
EMISSIONS AIR QUALITY MONITORING

- Creation of a permanent platform for data sharing
- Monitoring and evaluation of air quality in the Po Valley, including the effects of transboundary pollution between Italy and Slovenia

Woody biomass & heating: context

Biomass and Climate Change

- In the production of energy from alternative sources, biomass plays an important role, especially in **fighting climate change**. For these reasons, **National and Regional policies in recent years have encouraged the use of woody biomass** during energy production and non-industrial combustion.



Biomass and Air Quality

- Biomass devices can have **negative effects on air quality**, especially in Po Valley where air quality standards are not met and infringement procedures for non compliance of EU standards, are ongoing.



Economical and social aspects

- In recent years, due also to the economic crisis, habits of Italian people for domestic heating have increasingly shifted towards the use of woody biomass, which is characterized by **lower costs compared to methane**, and is also favored in some geographical areas by a wide availability of wood resource.





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The impact of the combustion of woody biomass in the Po valley



Sector	NOx	NH ₃	PM10	NMVOC
Energy production and refineries	7 %	0 %	1 %	0 %
Residential combustion	9 %	0 %	55 %	8 %
Industrial combustion	15 %	0 %	3 %	1 %
Production processes	3 %	0 %	3 %	5 %
Extraction and distribution of fuels	0 %	0 %	0 %	3 %
Solvent use	0 %	0 %	1 %	25 %
Road Transport	53 %	2 %	23 %	7 %
Other mobile sources	11 %	0 %	5 %	1 %
Waste treatment and disposal	1 %	1 %	0 %	0 %
Agriculture	1 %	97 %	6 %	18 %
Other sources and sinks	0 %	0 %	2 %	32 %

mostly from burning biomass

Fonte: database PREPAIR 2019

In Po Valley the residential heating sector is the first source of primary PM10 emissions. In particular, in recent years, wood combustion has assumed a predominant role compared to other emissive sources, especially for fine particulate matters.



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Technical and specialist training for installers and designers of domestic biomass systems

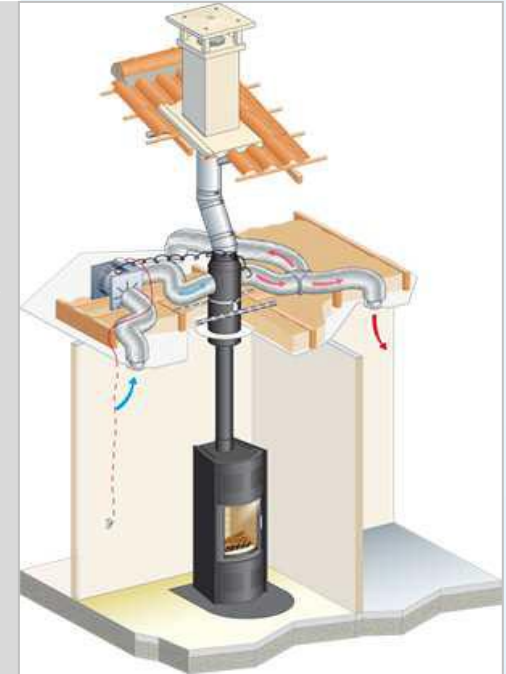


Aims of the action

1. **Qualification of the technical competences** of installers, maintenance engineers and designers of civil and residential biomass systems
2. **Promote the sustainability** of domestic burning biomass for a cleaner and safer use, through the important role played by technicians in providing information to end users.

The action is coordinated by the Province of Trento

- Creation of a shared **training format**
- Organization of **training courses** in the Po Basin Regions involved in the action



Expected results:

- Training of about 80 professionals in each partner region involved
- Dissemination of importance of domestic burning biomass for air quality protection
- Dissemination of a culture of proper design, construction and maintenance of domestic biomass facilities to reduce emissions of pollutants

Start: July 2017 - End: March 2022



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Technical and specialist training for installers and designers of domestic biomass systems



First results:

1. A shared training format for the course
2. 1st experimental edition of the training course organized in Trento -> 42 professionals trained by the end of 2018
3. 1st edition of the training course organized in Veneto (Padua) -> 12 professionals train
4. 2nd edition of the training course organized in Veneto (Padua) -> to be concluded within the 2019

Next steps:

- Second and third editions of the training course organized in Trento (to be held between Sep. 2019-Oct. 2020)
- Training courses organized in the other partner Regions



WORKSHOP COMBUSTIONE DELLA BIOMASSA LEGNOSA E QUALITÀ DELL'ARIA

SEMINARIO TECNICO PER PROGETTISTI, INSTALLATORI E MANUTENTORI
DI IMPIANTI DOMESTICI A BIOMASSA LEGNOSA

DATA

13 APRILE 2018

ORARIO E LUOGO

DALLE 14:00 ALLE 18:00

SALA DEI "DUECENTO" - SEDE ASSOCIAZIONE ARTIGIANI
VIA BRENNERO N.182 - TN

RELATORI

FUNZIONARI DI **APPA** (AGENZIA PROVINCIALE PER LA PROTEZIONE DELL'AMBIENTE)
E **APRIE** (AGENZIA PROVINCIALE PER LE RISORSE IDRICHE E L'ENERGIA)
DELLA PROVINCIA AUTONOMA DI TRENTO

COSTO

GRATUITO

CORSO FINANZIATO DAL PROGETTO LIFE PREPAIR
WWW.LIFEPREPAIR.EU

ISCRIZIONI

ISCRIZIONI ENTRO IL 3 APRILE 2018

CLICCA QUI O UTILIZZA IL QR CODE IN BASSO

INFO

FORMAZIONE@ARTIGIANI.TN.IT - 0461/803720

IN OCCASIONE DEL SEMINARIO SARÀ PRESENTATO
IL CORSO TECNICO SPECIALISTICO PER PROGETTISTI, INSTALLATORI
E MANUTENTORI DI IMPIANTI DOMESTICI
A BIOMASSA LEGNOSA

**CREDITI FORMATIVI
PER PROGETTISTI**





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Communication campaign

“Burn wood well. Don’t burn your health”



The poster features a cozy living room with a fireplace and a window showing a snowy landscape. The text is in Italian: "Brucia bene la legna. Non bruciarti la salute." At the top, it includes the LIFE logo, the text "With the contribution of the LIFE Programme of the European Union", and the prepAIR logo. Below the text, it provides the website "www.lifeprepare.eu" and email "info@lifeprepare.eu". A QR code is located in the bottom right corner. At the very bottom, there is a row of logos from various regional and national authorities.

Main objectives

1. Raising public awareness of the risks of domestic woody biomass heating systems;
2. Debunking clichés;
3. Communicating complex concepts through effective communication;
4. Change habits and behaviors;
5. Stimulate new investments aimed to replace the most polluting woody biomass devices.

Riscaldamento a legna e tutela della salute: al via la campagna del progetto PREPAIR

Realizzati un video e un opuscolo informativo focalizzato sul corretto utilizzo della legna come combustibile e sulle strategie per ridurre l'inquinamento da legna

Mercoledì 7 Novembre 2018

ANSA.it > Ambiente&Energia > Inquinamento > Parte nel Nord la campagna per i caminetti puliti

Parte nel Nord la campagna per i caminetti puliti

Con lo slogan 'brucia bene la legna, non bruciarti la salute'



Redazione ANSA 15 novembre 2018 10:49 Scrivi alla redazione Stampa

Start: November 2018 **End: December 2022**



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ACTION C.8

Analysis of the logistics of consumption and supply of woody biomass

TESAF Dipartimento Territorio
e Sistemi Agro-Forestali
Università di Padova



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



Analysis of the logistics of consumption and supply of woody biomass

	Sub-action
C.8.1	Study of supply flows of woody biomass
C.8.2	Definition of biomass management plans to optimize the production and use of biomass
C.8.3	Application of a traceability system to ensure and improve the management and quality of biomass produced
C.8.4	Stakeholder engagement and activation of clusters that can ensure the promotion of sustainable and efficient short chains
C.8.5	Collection and dissemination of good practices related to the use of biomass



With the contribution of the LIFE Programme of the European Union

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prepair.fla@gmail.com

Con l'aria pulita è più bella la vita !
Felice è la gente, se di inquinato
non c'è niente !

Grazie per l'attenzione

www.lifepreparepair.eu – info@lifepreparepair.eu



REGIONE DEL VENETO



PROVINCIA AUTONOMA DI TRENTO



Agenzia Regionale per la Prevenzione e Protezione Ambientale del Veneto



ARSO ENVIRONMENT
Slovenian Environment Agency



Comune di Bologna



Comune di Milano



CITTA DI TORINO

