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Proposal Of Draft For European Laws:

Set of proposals with concrete actual impact
on the Economy, Environment and society

Draft Law for Ban on smoking on the on
littoral

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Introduction on the set of proposals

This document is part of a set of propositions to implement laws across Europe with anticipated positive impact on simultaneously the society, the economy and the environment. These are all based on factual situation, and logical and pragmatistical solutions. Many issues should not need a legislative solutions, but in the dire situation it appears minimal mandatory laws seem necessary to impose solutions to communities whose leaders tend to pay lip-service to current issues, or institute solutions which tend to be inappropriate at best, ineffective in general, or contradictory at worst.

The objectives of these proposals is to have easy to implement but effective solutions for the good of the citizens in Europe, possibly as an incentive to the rest of the world.

Introduction to the Smoking Ban on the Littoral

Complete ban of smoking seems still impossible despite the huge impact on the citizens health (Direct, indirect or tertiary) and the dramatic impact of cigarette on the environment. Very few countries or states have past this step.

One of the less known impact of cigarettes, is the pollution of the ocean. Cigarette butts are the largest items found littered in the ocean. Besides and more dramatic still, this is the most powerful pollutant of all, given the numerous dangerous chemicals contained in them.

Roughly a5.6 trillion cigarettes are smoked yearly still across the world resulting in 5.6 trillion of cigarette butts. Each of these contains or degrade into 7,000 chemicals, most of them dangerous, to humans, and deadly to the flore and fauna of the oceans.

Studies have shown that 60% of this trillion of cigarette butts are littered with most ending-up in the ocean.

Of any easily preventable actions to preserve the ocean, preventing cigarette butts from ending in the ocean is a biggest, simplest objective to achieve. All other activities in that regard is puny at best in comparison, or shows lip-service to environmental concerns.

Any ban on smoking does have a huge impact on the health of society, on the social chances, and on the environment.

Why is a law necessary? The state of the environment and the safety and health of the citizens should be paramount. Incentive and communication have unfortunately been fruitless, with 30 to 50% of the population still smoking in 2019 across Europe, an average of 14 to 30 cigarettes per day. Actions attempting to prevent or help smokers to not litter cigarette butts has also been fruitless. The state of the ocean is dire, and cigarette butts are by far the biggest issue. Something must be done very quickly and radically. This will not be a first ban to smoking on the littoral, but it can only work if it is universal. All littered cigarette butts littered close to the ocean will end up

in the ocean. That includes beaches of course, but harbors, and boats, and all areas close to the shores, as rain water, or simply wind or gravity will push cigarette butts in the oceans. At this stage, only a strict, enforced law can solve the issue. The application of such law will have no direct costs on the society, will have no difficulty to be implemented. The impact will be dramatic

Drafting a law to ban smoking on or near the oceans will have a tremendous impact on the health of humanity and of the ocean. It is as necessary as it is easy to implement.

Summary of Base facts related to the Proposal

This proposal is not about just preventing smoking. It is mostly about preventing unnecessary pollution of the ocean, from the most damaging and numerous items: cigarette butts. It is about improving society in the various aspects of life for all citizens. The proposal relies on facts which logically results in the suggestion. The points below are a succinct summary with some more details available in the appendix below.

Smoking in the world:

Although the rate of smoking has decreased over the years, the numbers of persons smoking is still astonishing high. It varies greatly with for example, 35% of persons smoking in France higher than in the US with 25% but lower than Russia with 58%. For most European countries the number is in the low to high 30s. Looking at daily smokers, the number drops but only in the high 20s. The average cigarettes smoked per day varies also per country but stays between 14 and 30s which means there are still many chain smokers, with one to 2 cigarettes per hour on the average.

Raising the price of cigarette is one of the weapon to induce reduction. The price of a pack of cigarette is fairly equal across Europe and the world, between \$6 and \$7, with some exception in the UK, Norway and Australia with prices over \$10. These countries have the lowest incidence of smokers.

But generally there are still numerous smokers in the world.

Impact of cigarettes on the environment:

As we discuss Global Warming and environmental issues, the production of cigarette is also a major contributor, especially regarding the strictly recreational usage with actually negative impact on productivity and health.

The impact starts with the production of tobacco, which reaches 32 million tons per year of green leaves tobacco. for the 6 trillion cigarettes produced. Tobacco is often grown without rotation with other crops (i.e. as a monocrop), leaving the tobacco plants and soil vulnerable to a variety of pests and diseases. This means that tobacco plants require large quantities of chemicals (insecticides, herbicides, fungicides and fumigants) and growth regulators (growth inhibitors and ripening agents) to control pest or disease outbreaks. Many of these chemicals are so harmful to both the environment and farmers' health that they are banned in some countries, but have moved to low- and middle-income countries.

Tobacco plants also require intensive use of fertilizers because they absorb more nitrogen, phosphorus and potassium than other major food and cash crops, meaning tobacco depletes soil fertility more rapidly.

Processing, the curing of tobacco leaves to produce dry tobacco is highly energy intensive, using coal or wood burning that contributes to greenhouse gas emissions and deforestation. Tobacco production also uses more than 22 billion tonnes of water.

Smoking, a recreational dangerous habit has major impact on the environmental. A person smoking a pack of 20 cigarettes per day for 50 years is responsible for 1.4 million litres of water depletion. The emissions due to tobacco are roughly 8.76 million CO₂ equivalent – which amounts to the emissions of nearly 3 million transatlantic flights.

In addition to the growing of tobacco, the production and the transport, the consumption adds further to the pollution. With a nearly 1 billion smokers in 2012 consuming an estimated 6.25 trillion cigarettes worldwide, tobacco smoke from cigarettes globally released significant amounts of toxicants and pollutants directly into the environment. Tobacco smoke is a complex mixture of thousands of chemical compounds in the form of gases and microscopically small droplets suspended in the air.

Even the “Sidestream” smoke contains more toxic chemical compounds than mainstream smoke – for example, 147 times more ammonia; 16 times more pyridine; 15 times more formaldehyde; 12 times more quinolone; three times more styrene; and twice as much nicotine. Freshly emitted sidestream smoke particles are on average half the size of mainstream smoke particles, allowing them to penetrate deeper into the lung and transfer more easily into the bloodstream. Inhaled fresh sidestream smoke is approximately four times more toxic and sidestream condensate is two to six times more carcinogenic than mainstream smoke.

Impact of cigarettes on health

The impact of cigarette on health is not debatable anymore. The effects are numerous. Smokers are more likely than nonsmokers to develop heart disease, stroke, and lung cancer. Estimates show smoking increases the risk:

- For coronary heart disease by 2 to 4 times
- For stroke by 2 to 4 times
- Of men developing lung cancer by 25 times
- Of women developing lung cancer by 25.7 times

Smoking causes diminished overall health, increased absenteeism from work, and increased health care utilization and cost. Tobacco smoke has more than 4,000 chemical compounds, at least 250 are known to cause diseases. Exposure to secondhand smoke raises the risk by as much as 30 percent.

In terms of the estimated amount of public healthcare expenditure attributable to smoking in a given year, covering the six main smoking-related disease categories;

- Productivity losses to the EU economy due to increased absenteeism and early retirement attributable to smoking.
- Premature mortality attributable to smoking in the six main smoking-related disease categories, expressed in monetary terms.
- Public healthcare expenditure on treating smoking attributable diseases suffered by smokers is estimated at around €25.3 billion in 2009, which corresponds to about 2.9% of total healthcare spending in the EU27 and 0.22% of its GDP;
- Smoking related productivity losses (absenteeism and economic inactivity due to incapacity) cost the EU economy an estimated €7.3 billion in the year 2009. This is the equivalent of about 0.06% of EU 27 GDP;
- Premature mortality attributable to smoking is estimated at €517 billion in 2009 on a willingness-to-pay (WTP) basis, corresponding to 4.4% of the Europe’s GDP.

All together these estimates suggest a total cost of about €544 billion in 2009, about 4.6% of the EU27⁷ combined GDP.

Impact of cigarettes butts on environment

Research shows that cellulose acetate-based cigarette filters do not biodegrade under most circumstances because of their compressed make up and the presence of acetyl molecules. They contain and eventually leach out some of the 7000 chemicals. Many of these chemicals are themselves environmentally toxic, and at least 50 are known human carcinogens. Studies have also shown that harmful chemicals such as nicotine, arsenic, polycyclic aromatic hydrocarbons (PAHs) and heavy metals from discarded tobacco product waste, and can be acutely toxic to aquatic organisms such as fish. One recent study used the USA's Environmental Protection Agency standard toxicity assessment protocols to show that cigarette butts soaked in either fresh or salt water for 96 hours have a lethal concentration that killed half the exposed test fish. These chemicals come from across the tobacco production process, including pesticides and fertilizers, additives, the cellulose acetate filter, and combustion products generated by smoking cigarettes. It is a nonbiodegradable plastic collection of cellulose acetate fibers.

Cigarette butts are the most common type of litter on earth. Each year, about 5.6 trillion cigarette filters are manufactured worldwide with a filter made of cellulose acetate. Unfortunately, sixty-six percent of all smoked cigarettes are irresponsibly dumped everywhere and a large majority ends up in the world's oceans.

Social Impact

Smoking is more prevalent, worldwide on the working poorer class. In Europe, with the average price of 7 Euro per pack / per day, the monthly out-of pocket costs of a smoker is 210 Euro. The impact on an average low wage of 1500 Euro / month is 14%.

To this one can add all the ailments which will undoubtedly follows within years, affecting the whole family (second and third hand smoking), resulting in heavy financial direct or indirect costs.

Smoking ban on beaches

There is a growing movement to prevent the dramatic pollution of our oceans. Many a country have issued smoking bans on the most obvious areas, most sensitive to such pollution. New Jersey has implemented smoking ban on all its beaches in 2018. Florida is evaluating doing the same. California has had non-smoking beaches since 1995. Alabama is working on protection of its shores with a similar ban.

Thailand, an important tourists destination, which found an average of 0.76 cigarette butts per square meter in a sample area will initiate prison sentences for littering cigarette butts. As of June 2011 municipalities in all fifty US states had passed smoking bans in parks and beaches. Only Alaska has dared impose a complete smoking ban on the whole state.

In France, a few maires of beach front cities are trying to impose bans on smoking on beaches. There is a movement to create a complete ban on 7800 km of beaches in Italy.

So far most of these laws are aimed at the beach goers to prevent inconveniences during their beach stays. The real impact, however, is on the ocean (and national Parks) and the litter from cigarette butts.

Impact of Cigarette on the Ocean

Forget plastic bottles and caps, beverage cans, plastic bags, food containers, and plastic straws. Cigarette butts are the most abundant item in the ocean. As we all know, the world's oceans are under attack. Despite containing 97 percent of the planet's H₂O and covering 71 percent of the surface of the Earth, the seas are increasingly becoming the trash can of humanity.

Maritime Health review showed that the prevalence of smoking among fishermen and seamen is between 42 and 75%, far above the national average.

Cigarette butts are the most littered item in the world. Each year, about 5.6 trillion cigarette filters are manufactured worldwide with a filter made of cellulose acetate. Unfortunately, sixty-six percent of all smoked cigarettes are irresponsibly dumped everywhere and a large majority end up in the world's oceans. According to Ocean Conservancy, a nonprofit environmental organization headquartered in Washington, DC, cigarette butts are by far the biggest source of trash found on beaches and waterways around the world, roughly 1/5 of all litters.

Clearly, if looking at protecting the ocean, the biggest and simplest impact would be to prevent cigarette butts from flowing into it.

Objectives to reach:

Given the data and the information above, actions must be taken to prevent cigarette butts to reach the ocean. As it is impossible to control and impossible to collect these myriad of litters, the main objective would be to:

1. Prevent smokers to lit-up a cigarette on or close to shores as a large number will end-up directly in the ocean
2. Prevent people from bringing cigarettes in the closeness of the ocean
3. Protect the population and workers, around the sea from smoking and improve their health
4. Impact the world by influencing further smoking ban restriction, resulting in better health and lower health spending for all
5. Protect the poorest by banning smoking in the sensitive area.

Law proposal

The proposed law will be quite simple, and will not bear any burden on the communities, even from the start. The proposition would be as follows:

- Impose Ban on Smoking in the area on the coastlines. This must include, the areas within the legal definition of "Littoral". That would include, the beaches, the harbors, and all others areas within the 500 meters to 1 km from the seas and rivers whatever the respective countries definitions. For the private residences included in this zones, smoking would also be forbidden outside as well. In public residences, the ban is already in effect theoretically.

- It will be easier to implement, countries-wide bans on all littorals than to do a confusing piece-meal by areas such as only beaches for example. A national law would greatly ease the implementation and would reduce the costs avoiding numerous signalisation.
- Impose Ban on Smoking on all boats (Sea liners, commercial, small fishing boat, kayaks etc..). The impact of smoking on boats and cigarette butts is otherwise impossible to control.
- Propose substantial fines for smoking in these areas.

APPENDICES

Base facts related to the Proposal

Smoking per country

Although the rate of smoking has decreased over the years, the numbers of persons smoking is still astonishingly high. It varies greatly with for example, 35% of persons smoking in France higher than in the US with 25% but lower than Russia with 58%. For most European countries the number is in the low to high 30s. Looking at daily smokers, the number drops but only in the high 20s. The average cigarettes smoked per day varies also per country but stays between 14 and 30s which means there are still many chain smokers, with one to 2 cigarettes per hour on the average.

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Impact of cigarettes production

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Finite resources

The impacts of cigarette are on climate change from energy and fuel consumption, water and soil depletion, and acidification. The global cultivation of tobacco requires substantial land use, water consumption, pesticides and labour all finite resources that might be put to better use. Globally, the cultivation of 32.4 Million tonnes (Mt) of green tobacco, used for the production of 6.48 Mt of dry tobacco in the six trillion cigarettes manufactured worldwide in 2014, contributes almost 84 Mt CO₂ emissions approximately 0.2% of the global total.

Processing, the curing of tobacco leaves to produce dry tobacco is highly energy intensive, using coal or wood burning that contributes to greenhouse gas emissions and deforestation. Tobacco production also uses more than 22 billion tonnes of water. The transport and manufacture of cigarettes, as well as their final use and disposal, also use more resources and leave further waste.

The world's top cigarette consuming country, China, harvests over 3 Mt of tobacco leaves using over 1.5 million hectares of arable land and significant fresh water resources while habitats suffer from water scarcity and nearly 134 million of its people are undernourished. In Zimbabwe a hectare of land could produce 19 times more potatoes than the 1–1.2 tonnes of tobacco currently cultivated.

The evidence also suggests that growing alternative crops is better for farmers and their families, as child labour remains a major issue in tobacco production. Almost 90% of all tobacco production is concentrated in the developing world – of the top ten tobacco producing countries, nine are developing and four are low-income food-deficit countries (LIFDCs), including India, Zimbabwe, Pakistan, and Malawi. However, the majority of cigarette consumption takes place in the developed world.

The environmental impact of a single smoker over their lifetime: a person smoking a pack of 20 cigarettes per day for 50 years is responsible for 1.4 million litres of water depletion.

Agrochemical use

Tobacco is often grown without rotation with other crops (i.e. as a monocrop), leaving the tobacco plants and soil vulnerable to a variety of pests and diseases. This means that tobacco plants require large quantities of chemicals (insecticides, herbicides, fungicides and fumigants) and growth regulators (growth inhibitors and ripening agents) to control pest or disease outbreaks. Many of these chemicals are so harmful to both the environment and farmers' health that they are banned in some countries. In low- and middle-income countries, pesticide and growth inhibitors are usually applied with handheld or backpack sprayers, without the use of the necessary protective equipment, making skin and respiratory exposure to the toxic chemicals more likely.

Tobacco plants also require intensive use of fertilizers because they absorb more nitrogen, phosphorus and potassium than other major food and cash crops, meaning tobacco depletes soil fertility more rapidly. Added to this, other agricultural practices designed to attain high leaf yields and high nicotine levels (including "topping", where the top part of the crop is removed to prevent seeds forming and scattering onto the soil, and "desuckering", where lateral buds are removed) also help deplete the soil.

An estimated 1.5 billion hectares of (mainly tropical) forests have been lost worldwide since the 1970s (9), contributing to up to 20% of annual greenhouse gas increases (10). Deforestation is one of the largest contributors to CO₂ emissions and climate change.

Farmer and community health

Organic pesticides such as dichlorodiphenyltrichloroethane (DDT) and 11 other persistent organic pollutants (POPs) that are banned in high-income countries but still used in many low- and middle-income countries create environmental health problems in tobacco-farming communities. These pesticides are often sold in bulk and without proper labelling and instructions, leaving farmers largely unaware of the toxicity of the products, the correct dosage, and safety measures they should take (5, 83). Health effects from chronic exposure to certain pesticides include birth defects, benign and malignant tumours, genetic changes, blood disorders, neurological disorders and endocrine disruption. One study assessed the impact on farmers' skin and respiratory functions of exposure to two common pesticides and a growth regulator. It found that mixing and spraying these pesticides led to significant chemical exposure (84). Other studies show that even tobacco workers who do not directly work with pesticides (e.g., harvesters) are vulnerable to pesticide poisoning.

Until recently, only vague estimates of the environmental costs of tobacco manufacturing and transport were available – but even those were ominous. In 1995, researchers estimated the annual global environmental costs of tobacco manufacturing included 2 million metric tonnes of solid waste, 300 000 metric tonnes of nicotine-contaminated waste and 200 000 metric tonnes of chemical waste (54). Carnegie Mellon University's Green Design Institute made an Economic Input-Output Lifecycle Assessment (EIOLCA) that in 2002 the USA's tobacco industry alone was responsible for emitting 16 million metric tonnes of CO₂ equivalents₁ (96, 97).

Emissions

BAT's (British American Tobacco) 2015 emissions amounted to a self-reported 876 000 metric tonnes CO₂ equivalents (122). If BAT's total global market share is 10.7% according to the 2016 Euromonitor (123), then that means that total emissions due to tobacco are roughly 8.76 million CO₂ equivalent –

which amounts to the emissions of nearly 3 million transatlantic flights. Other sorts of emissions also are unknown.

Transport

There is very little reporting by the industry on their transport-related environmental impacts. JTI, however, does separate out its CO₂ emissions for transporting tobacco goods, which amounts to 882 000 metric tonnes. PMI's vehicle fleet emissions amount to 115 182 metric tonnes CO₂ equivalent, not including its 4289 metric tonnes of emissions resulting from aircraft use (135). Combined, this amounts to less than half of PMI's manufacturing emissions (135).

Mainstream and sidestream smoke

Tobacco smoke is a complex mixture of thousands of chemical compounds in the form of gases and microscopically small droplets suspended in the air. Because the composition of this mixture depends to a large extent on the physical conditions under which it was generated and the behaviour of the smoker, it is important to distinguish two major types of tobacco smoke: mainstream smoke and sidestream smoke. Mainstream smoke is emitted at the filter end of a cigarette when a smoker draws air through the burning cigarette to inhale, and the tobacco burns at a high temperature (up to 950°C) due to the increased supply of oxygen. In contrast, sidestream smoke is generated at a lower temperature between puffs (600–800°C) and is emitted at the smoldering tip of the cigarette. Sidestream smoke contains more toxic chemical compounds than mainstream smoke – for example, 147 times more ammonia; 16 times more pyridine; 15 times more formaldehyde; 12 times more quinoline; three times more styrene; and twice as much nicotine. Freshly emitted sidestream smoke particles are on average half the size of mainstream smoke particles, allowing them to penetrate deeper into the lung and transfer more easily into the bloodstream (143). Inhaled fresh sidestream smoke is approximately four times more toxic and sidestream condensate is two to six times more carcinogenic than mainstream smoke.

With a nearly 1 billion smokers in 2012 consuming an estimated 6.25 trillion cigarettes worldwide, tobacco smoke from cigarettes globally release significant amounts of toxicants and pollutants directly into the environment. Table 4 shows the global contributions in 2012 of selected constituents of mainstream and sidestream smoke. In a single year, global tobacco smoke contributed thousands of metric tonnes of known human carcinogens, other toxicants, and greenhouse gases. Toxic emissions

Table 4: Estimated annual contribution to the global environment from tobacco smoke by all cigarette users, 2012

Tobacco smoke constituents (IARC Cancer Risk Classification) ¹	Mass in sidestream smoke (per cigarette) ²	SS/MM ratio ³	5-year contribution single smoker			
			SS only		SS + M S	
			Estimates (1000 kg)		Estimates (1000 kg)	
			LB ⁴	UB ⁴	LB ⁴	UB ⁴
Total 'tar'	10.5–34.3 mg		65 625	215 000	137 740	451 264
Ammonia	4.0–6.6 mg	147	25 000	41 250	25 170	41 531
Nicotine	1.9–5.3 mg	2.31	11 875 000	33 125 000	17 016	47 465
Pyridine	195.7–320.7 mg	16.1	1223	2004	1299	2129
NNK (1)	50.7–95.7 mg	0.4	0.317	0.598	1.109	2.093
NNN (1)	69.8–115.2 mg	0.4	0.436	0.720	1.451	2.394
Styrene (2B)	23.2–46.1 mg	2.6	145	288	201	399
Toluene (3)	134.9–238.6 mg	1.3	843	1491	201	399
Benzene (1)	70.7–134.3 mg	1.1	442	839	855	1624
Isoprene (2B)	743.2–1162.8 mg	1.1	4645	7267	8986	14 060
1, 3 – Butadiene (1)	81.3–134.7 mg	1.3	508	842	899	1489
Acetaldehyde (2B)	1683.7–2586.8 mg	1.3	10 523	16 168	18 556	28 509
Acrolein (3)	342.1–522.7 mg	2.5	2138	3267	2983	4558
Formaldehyde (1)	540.4–967.5 mg	14.8	3378	6017	3606	6455
Carbon dioxide	79.5–759 mg	9.7	2 800 000	4 743 750	3 088 660	5 232 796
Methane	1.3 mg	4.0	19 375	19 375	24 280	24 280
Nitrous oxides	0.051 mg	3.6	319	319	406	406

include 3000–6000 metric tonnes of formaldehyde; 12 000–47 000 metric tonnes of nicotine; and the three major greenhouse gases found in tobacco smoke – carbon dioxide, methane, and nitrous oxides .

Third-hand smoke is the long-lasting residue resulting from second-hand smoke that accumulates in dust, in objects and on surfaces in indoor environments where tobacco has been smoked, and which can end up in landfills and waste. To understand the composition of third-hand smoke and its contribution to the pollution of indoor and outdoor environments, it is important to understand how third-hand smoke evolves from second-hand smoke. Compounds found in third-hand smoke include many of those found in second-hand smoke, such as highly mutagenic and carcinogenic tobacco-specific nitrosamines (TSNAs) (e.g., NNK); toxic metals (e.g., lead, cadmium); alkaloids (e.g., nicotine); more general products of combustion of organic materials (e.g., polycyclic aromatic hydrocarbons – PAHs); and various volatile organic compounds (e.g., acrolein and other aldehydes). Third-hand smoke ages chemically, so the compounds it contains change and become more toxic over time. Notably, nicotine, a ubiquitous contaminant in third-hand smoke, can react with common indoor air pollutants to create additional toxic compounds not present in the original mixture. The reaction of nicotine with nitrous acid, a gaseous pollutant associated with outdoor sources such as traffic or indoor sources such as gas stoves, can create the carcinogen NNK

Impact of cigarettes on health

The impact of cigarette on health is not debatable anymore. The effects are numerous.

Smokers are more likely than nonsmokers to develop heart disease, stroke, and lung cancer.¹

- Estimates show smoking increases the risk:
 - For coronary heart disease by 2 to 4 times^{1,6}
 - For stroke by 2 to 4 times¹
 - Of men developing lung cancer by 25 times¹
 - Of women developing lung cancer by 25.7 times¹
- Smoking causes diminished overall health, increased absenteeism from work, and increased health care utilization and cost.

Smokers are at greater risk for diseases that affect the heart and blood vessels (cardiovascular disease).

- Smoking causes stroke and coronary heart disease, which are among the leading causes of death.
 - Even people who smoke fewer than five cigarettes a day can have early signs of cardiovascular disease.
 - Smoking damages blood vessels and can make them thicken and grow narrower. This makes your heart beat faster and your blood pressure go up. Clots can also form.
 - A stroke occurs when:
 - A clot blocks the blood flow to part of your brain;
 - A blood vessel in or around your brain bursts.
 - Blockages caused by smoking can also reduce blood flow to your legs and skin.^{1,2}
- Smoking can cause cancer almost anywhere in your body:

- Bladder
- Blood (acute myeloid leukemia)
- Cervix
- Colon and rectum (colorectal)
- Esophagus
- Kidney and ureter
- Larynx
- Liver
- Oropharynx (includes parts of the throat, tongue, soft palate, and the tonsils)
- Pancreas

- Stomach
 - Trachea, bronchus, and lung
- Smoking also increases the risk of dying from cancer and other diseases in cancer patients and survivors. If nobody smoked, one of every three cancer deaths in the United States would not happen. Smoking harms nearly every organ of the body and affects a person's overall health.^{1,2}
- Smoking can make it harder for a woman to become pregnant. It can also affect her baby's health before and after birth. Smoking increases risks for:^{1,2,5}
 - Preterm (early) delivery
 - Stillbirth (death of the baby before birth)
 - Low birth weight
 - Sudden infant death syndrome (known as SIDS or crib death)
 - Ectopic pregnancy
 - Orofacial clefts in infants
 - Smoking can also affect men's sperm, which can reduce fertility and also increase risks for birth defects and miscarriage.²
 - Smoking can affect bone health.^{1,5}
 - Women past childbearing years who smoke have weaker bones than women who never smoked. They are also at greater risk for broken bones.
 - Smoking affects the health of your teeth and gums and can cause tooth loss.¹
 - Smoking can increase your risk for cataracts (clouding of the eye's lens that makes it hard for you to see). It can also cause age-related macular degeneration (AMD). AMD is damage to a small spot near the center of the retina, the part of the eye needed for central vision.¹
 - Smoking is a cause of type 2 diabetes mellitus and can make it harder to control. The risk of developing diabetes is 30–40% higher for active smokers than nonsmokers.^{1,2}
 - Smoking causes general adverse effects on the body, including inflammation and decreased immune function.¹
 - Smoking is a cause of rheumatoid arthritis.¹

Secondhand Smoke?

It can come from a cigarette cigar or pipe. Tobacco smoke has more than 4,000 chemical compounds, at least 250 are known to cause disease. Exposure to secondhand smoke raises the risk -- by as much as 30 percent -- that others will get lung cancer and many other types of cancer it can lead to emphysema, and it is bad for your heart.

Smoke makes your bloodstickier, raises your "bad" LDL Cholesterol and damages the lining of your blood vessels. Eventually, these changes can make you more likely to have a heart attack or stroke. Kids are particularly at risk for the effects of secondhand smoke because their bodies are still growing and they breathe at a faster rate than adults.

Spend on Health Care due to smoking

Of every \$10 spent on healthcare in the U.S., almost 90 cents is due to smoking, a new analysis says. Using recent health and medical spending surveys, researchers calculated that 8.7 percent of all healthcare spending, or \$170 billion a year, is for illness caused by tobacco smoke, and public programs like Medicare and Medicaid paid for most of these costs.

Estimating the costs of smoking to EU society

Estimates of various elements of the social cost of smoking in the European Union have ■ Direct costs to European public healthcare systems, in terms of the estimated amount of public healthcare expenditure attributable to smoking in a given year, covering the six main smoking-related disease categories;

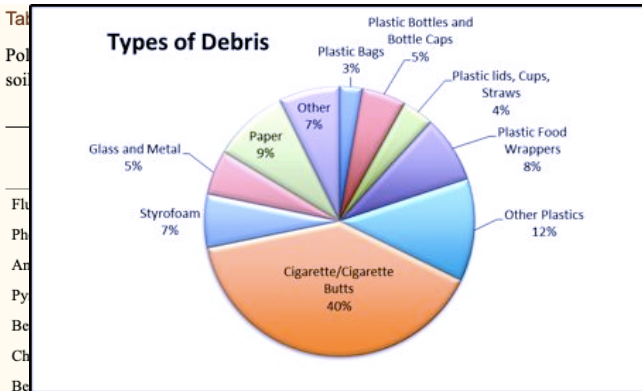
- Productivity losses to the EU economy due to increased absenteeism and early retirement attributable to smoking; and
- Premature mortality attributable to smoking in the six main smoking-related disease categories, expressed in monetary terms. Data scarcity, especially in relation to treatment costs, is a significant issue but with the methods and assumptions used:
- Public healthcare expenditure on treating smoking attributable diseases suffered by smokers is estimated at around €25.3 billion in 2009, which corresponds to about 2.9% of total healthcare spending in the EU27 and 0.22% of its GDP;
- Public healthcare expenditure on treating illnesses attributable to environmental tobacco smoking (ETS) is estimated at around €0.38 billion, which corresponds to 0.03% of total healthcare spending in the EU27 and 0.003% of GDP;
- Smoking related productivity losses (absenteeism and economic inactivity due to incapacity) cost the EU economy an estimated €7.3 billion in the year 2009. This is the equivalent of about 0.06% of EU 27 GDP;
- Premature mortality attributable to smoking is estimated at €517 billion in 2009 on a willingness-to-pay (WTP) basis, corresponding to 4.4% of the Europe's GDP.

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Impact of cigarettes butts on environment

Research shows that cellulose acetate-based cigarette filters do not biodegrade under most circumstances because of their compressed make up and the presence of acetyl molecules. However, under specific circumstances (with sunlight and moisture), the cigarette filters may break into smaller plastic pieces containing and eventually leaching out some of the 7000 chemicals contained in a cigarette. Many of these chemicals are themselves environmentally toxic, and at least 50 are known human carcinogens. Studies have also shown that harmful chemicals such as nicotine, arsenic, polycyclic aromatic hydrocarbons (PAHs) and heavy metals leach from discarded tobacco product waste, and can be acutely toxic to aquatic organisms such as fish. One recent study used the USA's Environmental Protection Agency standard toxicity assessment protocols to show that cigarette butts soaked in either fresh or salt water for 96 hours have a lethal concentration that killed half the exposed test fish These chemicals come from across the tobacco production process, including pesticides and fertilizers, additives, the cellulose acetate filter, and combustion products generated by smoking cigarettes..

The discarded cigarette butt consists of unsmoked remnant tobacco, the paper wrap remnants, and the filter (99 % of cigarettes are filtered). Each of these components presents an individual environmental concern. In fact, as discussed above, the cigarette filter may compound the potential environmental effect of chemicals leached from butts because it is essentially a nonbiodegradable plastic collection of cellulose acetate fibers. Most filters have 2 layers of paper and/or rayon wrapping, the porosity of which acts to control the amount of airflow (ventilation) through the filter. Cigarettes also contain glues to hold the paper and filter together and alkali metal salts of organic acids (eg, sodium acetate) to



Benzo(k)fluoranthene	0.015	0.055	0.0012
Benzo(a)pyrene	0.031	0.12	0.0025
Dibenzo(a,h)anthracene	0.0065	0.016	0.00053
Benzo(g,h,i)perylene	0.031	0.093	0.0025
Total	0.39	1.1	0.032

¹Values of load potential were calculated using the quantity of cigarette butts per month, concentration of PAHs, and length of sampling environment (3.2 km).
<https://www.researchgate.net/publication/311111111>

maintain burning. Although exposure to UV rays may eventually cause the filter to deteriorate into small pieces, the plastic particles and their toxicants may never disappear from water or soil and may continue leaching chemicals for up to 10 years

Cigarette butts are the most common type of litter on earth. Collected, they weigh in the millions of pounds. The toxic chemicals absorbed by cigarettes' cellulose acetate filters and found in butts' remnant tobacco, are quickly leached from the butts by water. The evidence indicates that the toxic chemicals leached from discarded cigarette butts present a biohazard to the water flea at concentrations of more than 0.125 butts per liter, or about one butt per two gallons of water. The leachate from the remnant tobacco portion of a cigarette butt is deadlier at smaller concentrations than are the chemicals that leach out of the filter portion of a butt.

Each year, about 5.6 trillion cigarette filters are manufactured worldwide with a filter made of cellulose acetate. Unfortunately, sixty-six percent of all smoked cigarettes are irresponsibly dumped everywhere and a large majority end up in the world's oceans.

Smoking ban on beaches

Some countries have prohibited smoking on beaches. It is still a growing but rare endeavor. Here are the few examples:

- Gov. Phil Murphy signs NJ beach smoking ban with \$250 fine The prohibition goes into effect early next year (2018) and covers all local and state-owned beaches. Violators caught smoking on the beach will be subject to a \$250 fine on the first offense, a \$500 fine on the second offense and a \$1,000 fine on future violations.
- A new bill aims at keeping Florida beaches from turning into ashtrays. Sarasota House Republican Joe Gruters wants to outlaw smoking on all public beaches through a newly introduced bill, which would fine first-time violators \$25 or 10 hours of community service. If passed, the bill, which doesn't seem to include any language about vaping, would go into effect July 1 2017.

- Italy: Consumer watchdog Codacons wants local authorities across Italy to introduce legislation forbidding smoking along its 7,800 kilometres of coastline, and warns that it is prepared to take them to court if they don't. While some communities have already done so, "not enough has yet been done to protect bathers from the health risks of smoking and preserve the environment", the group said.
- GULF SHORES, Ala. (AP) — The sugar-white sand in Gulf Shores is Alabama's most popular half-mile stretch of public beachfront. This area also is undergoing \$15 million in renovations and city officials want to keep it looking nice. So, in June, city officials adopted a wide-ranging list of regulations that included an Alabama first: The public beachfront became smoke-free.
- Thailand is to ban smoking on some of the country's most popular tourist beaches, with the prospect of up to a year in prison for those caught lighting up, according to reports by local media. The move follows a recent survey of litter on Patong beach, Phuket – visited by millions of foreign tourists each year – which found an average of 0.76 cigarette butts per square metre in a sample area, which would amount to 101,058 butts on the 2.5km-long stretch of sand.
- The American Nonsmokers' Rights Foundation maintains a national database that identifies smoking bans in a wide variety of outdoor settings, with beaches, parks, plazas, and zoos among the most common locations. The analysis of the information in this database showed that from January 1993 to June 2011, US smoking bans were imposed in 843 parks and on 150 beaches. Leading the nation were California, with bans in 155 parks and on 46 beaches; Minnesota, 118 parks and 25 beaches; and New Jersey, 83 parks and 18 beaches. Of the 150 beach bans, 75 percent (113) covered the entire beach, while the others covered sections of the beach. Ninety percent (136) of these bans were enacted by a city or county governing body. The remaining bans were imposed in a variety of ways, including a ballot measure, and by different bodies, such as a local board of health or state legislature. Of the 843 smoking bans in parks, 63 percent (534) covered the entire park, while the others covered sections. Forty-one percent (352) of the municipalities with park bans had "tot lot bans"—prohibitions on smoking in children's play areas.
- The initial beach bans were imposed in 1995–99 in Massachusetts and Rhode Island. By 2006 communities in seven more states had passed beach bans. Five years later, twenty-three states had such bans. Early park bans were implemented in 1993–94 in Alabama, California, Hawaii, New Jersey, and Wisconsin. By June 2011 municipalities in all fifty states had passed smoking bans in parks.
- In 1995, California was the first state to enact a statewide smoking ban; throughout the early to mid-2000s, especially between 2004 and 2007, an increasing number of states enacted a statewide smoking ban of some kind. As of July 2018, the most recent statewide smoking ban is Alaska's, which was signed into law on July 18, 2018, and went into effect on October 1, 2018.

So far most of these laws are aimed at the beach goers to prevent inconveniences during their beach stays. The real impact, however, is on the Ocean and the litter.

Impact of Cigarette on the Ocean:

Forget plastic bottles and caps, beverage cans, plastic bags, food containers, and plastic straws. Cigarette butts are the most abundant item in the ocean. The pollution of air and water is a consequence of human action. The destruction of the Earth's ecosystem starts on *terra firma* and is a responsibility of all its inhabitants without exception. As we all know, the world's oceans are under attack. Despite containing 97 percent of the planet's H₂O and covering 71 percent of the surface of the Earth, the seas are increasingly becoming the trash can of humanity.

Surprisingly, or maybe not, cigarette butts are the most littered item in the world. Each year, about 5.6 trillion cigarette filters are manufactured worldwide with a filter made of cellulose acetate.

Unfortunately, sixty-six percent of all smoked cigarettes are irresponsibly dumped everywhere and a large majority end up in the world's oceans. According to Ocean Conservancy, a nonprofit environmental organization headquartered in Washington, DC, cigarette butts are by far the biggest source of trash found on beaches and waterways around the world, roughly 1/5 of all litters.