Episode 33, September 10, 2022

Episode 33 A Mary and a question to a September Climate Forum in New York City

Mary sent these questions to a forum on climate held in New York City on September 20, 2022. “Since the European Parliament reclassified Industrial Wood Burning (Industrial Biomass Burning) as NOT carbon neutral and ended subsidies to IWB companies on September 13, 2022 (expected result), should the US follow suit? Or is the US ahead of Europe in this regard, already? Since residential wood burning as a source of the particulate PM 2.5 surpassed the percentage of PM 2.5 from traffic in the London area since 2019, and is a substantial portion of particulate pollution leading to ill health and early death of near neighbors of indoor residential wood burners around the world, most recently noted in the San Joaquin Valley of California, burning in wood stoves and fireplaces, should neighbor's resident-owned PM 2.5 monitors (PurpleAir monitors, used already on US AirNow Smoke and Fire Maps alongside $100,000 EPA PM 2.5 monitors, after being correlated with standard EPA data with a simple mathematical formula) be used to enforce regulation or ending use of indoor wood stoves and fireplaces if they exceed the W H O standard of 5 micrograms per meter cubed or the future U S standard of 8 micrograms per meter cubed using fenceline monitoring on neighbor's property with resident neighbors’ PM 2.5 monitors? Should this measurement which can be routine and cost effective, replace the failure to stop pollution by certification of wood stoves overseen now by the wood burning industry? Should breathalyzers at the neighbors’ PM 2.5 monitors which show exceedance of W H O or U S standards click wood stove wood intake doors into lockout, or shut off the ignition of wood stoves of wood burners, which would also be a routine and cost effective way to stop pollution if court ordered as breathalyzers for repeat drunk drivers are required to stop ignition of cars if breath alcohol level exceeds standards allowable?”

Episode 33 B Mary and Health Care Advocates for Air free of PM 2.5

Mary noted an article titled “Are My Patients Safe Amid Rising Temps and Worsening Air Quality?” In a panel study of asthmatics, hourly PM2.5 and temperature were evaluated for an association of lung function in adult asthmatics. The study concluded that short-term increases in PM2.5 were associated with increased rescue bronchodilator usage. Mary noted the conclusion was that there was a need for Greater Advocacy. One final point is the importance of advocacy from healthcare professionals for clean air policies to improve patient lives. The 2012 ATS Workshop Report offers an excellent example of advocacy -- the document was developed following a workshop bringing together experts from vital professional societies and government agencies to address critical threats to global respiratory health posed by climate change. As witnessed in the U.S. after the Clean Air Act of 1970, air quality improvements can reduce the related disease burden. A recent report from the Environmental Committee of the Forum of International Respiratory Societies details how local, regional, national, and worldwide efforts have impacted health outcomes. Healthcare providers can influence and change this dangerous arc to decrease morbidity and save lives.

Episode 33 C Mary and what can be burned without detection

Mary wondered what could be burned in indoor residential wood stoves and fireplaces, since there appeared to be no oversight on what could be burned. Mary noted, in Texas, people were seen trying to burn tires, treated wood, plastic and furniture. Caldwell County Authorities said it was important to bring authorities in because it might not just be a burn ban. A burn ban that had been in place since June 6 was lifted Sept. 1 by the Caldwell County judge after officials determined recent rainfall and other factors had improved conditions enough to allow outdoor burning. But as individuals begin to clean up their properties, officials with Caldwell County Homeland Security and Emergency Management and the Caldwell County Environmental Enforcement Unit are cautioning them to both take it slowly and make sure they’re familiar with what they can and cannot burn. “The only thing you can burn is brush – natural brush,” said the Emergency Management Coordinator for Caldwell County. “There is difference between violating a burn ban and illegally burning items,” he explained. “We’ve seen people trying to burn tires, treated wood, plastic and furniture.” The Texas Commission on Environmental Quality (T C E Q) sets the rules for what can be burned when outdoor burning is permitted. Prohibited items include Electrical insulation, Tires, and Potentially explosive materials or chemicals. Don’t create a traffic hazard: make sure that smoke doesn’t blow across roads. Don’t burn trash or anything else from a business. Don’t cause a nuisance: make sure you don’t smoke out your neighbors. Don’t burn anything during a Burn Ban or during a Red Flag Warning.

Episode 33 D Wendy and an Alaska Pilot Program to stop Residential Wood Burning

Wendy noted that Alaska was attempting to curb residential wood burning with an innovative pilot program. Wendy noted, in Alaska, researchers are studying whether electric heaters can help reduce air pollution in interior Alaska.

Researchers noted that PM 2.5 is very bad for your health, but on the other hand wood is the cheapest way to heat your home. Do you trade short term cost savings for short-term early death or long-term health problems? A researcher with University of Alaska Fairbanks (U A F) Alaska Center for Energy and Power, shows the ceramic bricks inside an electric thermal storage heater. Fifty of these stoves will be installed in homes in the North Pole area to help reduce PM2.5 caused by wood smoke. University of Alaska Fairbanks researchers plan to study the impact of new electric thermal storage heaters in North Pole over the next three winters. The goal of the study is to learn whether the heaters can help reduce home heating costs and improve air quality, especially the worst PM2.5 particulates, by reducing use of wood heat. A representative of the U A F-based Alaska Center for Energy and Power is leading the study. She said the heaters act like a thermal battery. "A coil heats up high-density, ceramic bricks, and it's in an insulated compartment," she said. "That heat can be stored in that compartment for up to 24 hours." For the study, the researcher and her research associate picked two neighborhoods north of Hurst Road, where some terrible winter air quality has been recorded. Homes are trapped in a bowl of land that is capped by a warm air inversion, sealing air pollution in. "Once the temperature inversion traps air close to the ground, then everything that we emit into the air just sits there, for days, weeks — however long the inversion lasts until it finally blows out," she said. The researcher said burning wood for home heating is currently the largest source of PM2.5 air pollution in the area. It is also the cheapest. There are no natural gas lines installed in the neighborhoods picked for the study. "PM 2.5 is very bad for your health. Residents "can't afford to heat 100% with heating fuel oil. There is a choice between healthier air quality and affordable home heating. In the first year of the study, about 100 households will get Purple Air outdoor air quality sensors to gather baseline data. About 20 of those households will also get a weather station to gather weather data. In the second year of the study, one neighborhood will be selected as a control group, and the other will have 50 electric thermal storage heaters installed in homes that currently use fuel oil and wood. Participants will receive a monthly credit on their electric bill. "If we install these into people's homes, A. Do they use them? B. If they do use them, how does it affect home energy costs? and C. How does it affect air quality?" the researcher said. "Because maybe they use them to displace a portion of their wood heat, or maybe they don't use them at all, or maybe they use them and it displaces the heating oil component of their energy use for their house." The researcher said they are still recruiting for study participants. "We've gone knocking on doors in North Pole, and we are signing people up," she said. Folks can find out more about the program at the website the Alaska Center for Energy and Power set up for the field study. The study will have implications for other places in Alaska, particularly where there is sometimes excess electricity, like in villages with wind turbines.

Episode 33 E Wendy and Wildfires in California

Wendy noted that wildfires in California were widespread. Wendy noted, in California, near Fresno, wildfires were causing hazardous air in Placer County. The Mosquito Fire is burning 4 miles east of Foresthill and had consumed 50 acres. The Mosquito Fire burning in the Tahoe National Forest near Foresthill is causing poor air quality throughout much of the Placer County foothills. Some densely populated suburbs may have smoky air later today. The latest air quality readings showed the air in Auburn was "very unhealthy," according to the federal air quality index. That means people with heart or lung disease, older adults, children, and teens should avoid physical activities outdoors. All others should avoid strenuous outdoor activities and consider canceling outdoor activity. Very unhealthy air is spread across Auburn, North Auburn, Penryn, Cool and areas north of Interstate 80. Smoky air near the ground is being observed in eastern Rocklin and northeast toward Grass Valley, said a forecaster with the National Weather Service. The smoky air is expected to shift northeast into higher elevations of the Sierra. But smoke "will funnel back into the valley locations" around midnight and air quality could worsen in eastern Roseville and Placerville. The smoke is not expected to be as dense in those communities as what Auburn is experiencing. "It will be a mix around of who gets to deal with the smoke,". The Mosquito Fire has burned more than 800 acres since it broke out in mountainous terrain along the Placer and El Dorado county border. The deputies in Placer and El Dorado counties have issued mandatory evacuations in some areas.

Episode 33 F Wendy and Davis, California Ordinance against Residential Wood Burning

Wendy thinks that even EPA approved wood burning devices can produce harmful levels of PM 2.5 emissions, since certification is primarily controlled by the wood burning industry, who have incentive to sell their products and promote residential wood burning, no matter the cost to neighbors of wood burners in health effects and climate effects. Individual residential wood burning emissions contribution to air pollution can be proven by using data PM 2.5 monitors located outdoors on near neighbors' property to show the exact levels of PM 2.5 entering neighbors' property. Wood

burner's residences do not have to be searched to find which wood burning device is used for the wood burning in order to enforce an ordinance that uses PM 2.5 monitors as proof of emissions at harmful levels, so enforcement of such an ordinance would be routine and cost effective. Wendy thinks that visible smoke is one way of showing PM 2.5 pollution from indoor residential wood burning, but in addition, fenceline readings from a resident-owned PurpleAir PM 2.5 monitor located outdoors on a near neighbor's land would be better, unquestioned, documentation. Wendy noted that one candidate for city council in Davis, California wholeheartedly supported an ordinance against residential wood burning, using visible smoke as an indicator, but also exempting EPA certified wood stoves from regulation or enforcement. Wendy noted, in Davis, California, the Sierra Club Yolano Group, as has been their custom for over 20 years, prepared a questionnaire for the 2022 Davis City Council election to be held in November 2022. On the subject of Toxics in the Environment Question #1 concerned Wood Smoke. Wendy felt that Candidate A from District A gave thoughtful and practical answers to the question, and Wendy saw that Candidate A from District A supported the wood smoke ordinance, as written, unequivocably. The Sierra Club question was: "A Small particulate pollution is the leading cause of respiratory disease in the Central Valley. Approximately 50% of winter ambient air particulate pollution is related to residential wood burning, and a number of Davis residents have complained of nearest-neighbor wood smoke pollution causing respiratory distress. Davis has implemented a wood smoke ordinance that allows complaints to be filed against wood burning residents if they are producing visible smoke from a non-EPA approved wood burning device. However, the police department and code enforcement) will not respond to complaints during nighttime hours when almost all wood-burning occurs because they do not have enforcement tools or available personnel. Why or why not do you support this ordinance, and what changes, if any, would you support to it including any enforcement mechanisms?" Responses from District A Candidates were, Candidate A from District A: I support the wood smoke ordinance. Recent fire seasons have increased public awareness of the dangers of air particulate pollution, especially for children, the elderly, those with respiratory ailments, and those with heart disease. It's reasonable to see wood burning as a luxury for families in Davis, not a way to meet basic heating needs. This luxury comes at a cost to public health, and Davis residents have the right to request enforcement. Currently, enforcement consists of a warning on first violation, a $100 fine on 2nd violation, a $200 fine for a 3rd violation, then $500 fines for subsequent violations. I agree with keeping the first violation at a warning, but then immediately ramping up to $500 fines. There is no reason why a resident should be knowingly violating the law and endangering the health of others without penalty. I respect the capacity constraints that prevent nighttime code enforcement. I suggest that all reported nighttime violations should be logged and a code enforcement officer dispatched the following day to investigate the report. If multiple neighbors corroborate the previous night's violation, then the penalty should be imposed (after an initial warning). Candidate B from District A: We should also continue to pursue funding and subsidies via our local air resources management board to incentive residents to remove or replace conventional fireplaces with substitute devices that do not produce wood smoke. As a member of the city's legislative subcommittee, I intend to continue to look for such funding opportunities. Candidate C from District A: First, I would like to address unenforced ordinances. We need to either enforce these or create an alternative structure which will be enforceable. My initial thought when it comes to these activities is to institute a permitting process that comes with an appropriate fee to those who feel these are necessary for them. This would include limited the time when use is allowed. Responses from District B Candidates: Candidate D from District B: I support the idea of the ordinance, but like all ordinances, for them to be effective they must be enforced. Candidate E from District B: Enforcement of wood smoke is not the best use of that resource. I do believe that having woodburning fireplaces phased out should be encouraged and supported with incentives and ordinances.

Episode 33 G Wendy and San Joaquin Valley phasing out agricultural burning by 2025

Wendy noted that phasing out ag burning is part of a larger plan to reduce emissions of harmful particulate matter known as PM 2.5. Residential wood burning consists of 90% PM 2.5, but that is not mentioned in this article. Wendy noted that in the San Joaquin Valley, after 20 years, the promise of ending agricultural burning may soon be a promise fulfilled. Wendy noted, in California, after 'decades of broken promises' San Joaquin Valley air regulators may finally end ag burning. The San Joaquin Valley air district committed to ending open agricultural burning by 2025, but nearly two decades of postponing the ban have left clean air advocates dubious that local air regulators will follow through. Air quality regulators in the San Joaquin Valley for years delayed pollution cuts that would have improved public health. Instead they chose to allow the agricultural industry to openly burn waste in a region with some of the worst air quality in the country. Now, state regulators with the California Air Resources Board (CARB) have set a deadline for the local San Joaquin Valley Air Pollution Control District to phase out open agricultural burning in the Valley by 2025, Bolstering the commitment is $180 million in state funding to help farmers transition to alternatives. The new plan clears a pathway for

“an 80% to 90% reduction in the Valley in the next three years,” especially those in farm towns who he said currently see “plumes of smoke coming up from fields.” The new strategy to phase out ag burning is part of a larger plan to reduce emissions of harmful particulate matter known as PM 2.5. Particles of PM 2.5 are small enough to travel deep into the lungs and even the bloodstream, where they can cause permanent damage. “All of those benefits to reduce PM 2.5 over time, especially those chronic, respiratory diseases a lot of us suffer from, I think we’re really going to see a change over the generations to come. That’s really exciting to me,” one resident said. While the air district argued the alternatives to burning were too expensive, it has simultaneously kept the costs of burning permits artificially low. The air district has not expressed any plans to enhance enforcement. Another concern to air quality advocates: political pressure. Corporations own large amounts of agricultural acreage in the Valley, and owners are looking for a maximum return on their investments. Part of that maximum return has to include the cost of disposal. Corporate folks need to figure out how to pay for this.” “A lot of industries have it tough. I’m not sure of an industry that gets to walk in and say ‘we just can’t, we think it’s too hard.’ The regs are hard, but they’re achievable.”

Episode 33 H Wendy and Wildfire smoke from Idaho and Montana drifting into other states
Wendy noted that wildfire smoke from Idaho and Montana is affecting the state of Colorado. Wendy noted that in Fort Collins, Colorado, the question was asked “What's causing these smoke-filled days and how long will they last?” Blame the smoky skies on Idaho and Montana, where around two dozen wildfires are burning. West winds are picking up the smoke and taking it east over Montana, North Dakota, and South Dakota, where the wind swirls south and carries the smoke into the Nebraska panhandle, southeastern Wyoming and Colorado. The smoke was thick enough to nearly obscure the foothills and leave a hint of the smell of wood burning in Fort Collins. A meteorologist at the National Weather Service in Boulder, said smoke conditions will get worse.

Episode 33 i Noel and the problem of using only large stationary source air quality monitors
Noel noted that a single control device on a large stationary source has been done with fitful results and has been the focus of spotty regulation in the past. Noel noted that residential wood burning emissions are 90% PM 2.5 Noel noted that using existing resident-owned residential PM 2.5 monitors as control devices (PurpleAir PM 2.5 monitors, which are so reliable that they are used on government Airnow Smoke and Fire maps alongside $100,000 standard EPA monitors, with data correlated using a simple mathematical formula) on the property of near neighbors of residential wood burners, who pollute hyper-localized areas. should be an additional focus going forward. Noel noted that that PM 2.5 is formed by the precursors N Ox and S O 4. Noel noted that for almost 20 years, the Environmental Protection Agency (EPA) has tried to regulate the effects of air pollution from one state causing issues in a different, downwind state. From the Clean Air Interstate Rule (C A I R) to the current version of the Cross-State Air Pollution Rule (C S A P R), EPA has encountered numerous legal setbacks when executing the Clean Air Act (C A A) to meet this goal. The public comment window for the latest version of C S A P R (the “Good Neighbor” provisions) recently closed, providing an opportunity to step back and see the larger goals, issues and purposes of this decades-long effort to implement pollution transport regulation. The foundation of the C A A is the establishment of National Ambient Air Quality Standards (N A A Q S) for criteria pollutants such as particulate matter less than 2.5 micron in diameter (PM2.5). A network of ambient air monitors across the country measures the concentration of each pollutant and compares it to these numerical standards. Counties with air quality worse than the N A A Q S can be designated as “non-attainment” and required to set strict limits on large projects (major modifications) at existing sources as well as on new large sources of air pollution. Power generation usually bears the brunt of these regulations. That’s because a single control device on a large stationary source is more impactful than addressing thousands of smaller sources. The CAA requires EPA to reevaluate the N A A Q S every five years, leading to simultaneous review of multiple standards. Note that the problem pollutant is corrected by controlling both the N A A Q S pollutant and its precursors. So, for example, N Ox and S O2 create PM2.5. As EPA gained a fuller understanding of the health effects of fine particulate matter, transport rules tackled how precursors like N Ox and S O2 form PM 2.5.

Episode 33 J Island and reducing deaths by choosing wind and solar over residential wood burning
Island noted that cutting PM 2.5 by choosing renewables over burning wood in households would reduce deaths. Island noted that cutting fine particulate matter (PM2.5) pollution, emitted from the burning of fossil fuels and wood, in line with W H O guidelines would reduce deaths linked to PM2.5 by 80%. That’s 3.3 million people. This will also save money. The health damages linked to PM2.5 pollution amounted to $8.1 trillion in 2019, according to the World Bank. That’s 6.1% of global GDP. The UK has a golden opportunity to act now, by setting air quality targets under the new

Environment Act to fully align with W H O science as soon as possible. This is achievable and desirable. If implemented, existing government plans would lead the UK to meet the W H O's interim guidelines by 2030, according to Imperial College London. This would reduce the number of coronary heart disease cases by 3,000 every year and deliver £380 billion in benefits between 2018 and 2034, in the form of reduced healthcare costs and higher productivity. A concerted, cross-government effort could, therefore, lead the UK to fully achieve these guidelines by 2030 or soon after and reap bigger benefits. Choosing renewables over wood-burning biomass in households and industries will reduce air pollution and conserve land for food farming and trees that absorb carbon dioxide.

Episode 33 K Gerda and the E U vote on ending Industrial Wood Burning Subsidies
Gerda noted that Europe is burning protected trees but falsely labeling the wood burning "clean energy". Until the European Union votes on September 13, 2022, electricity and heat from wood pellets currently counts toward European Union clean energy quotas, even as increased production turns forests in Estonia and Finland from carbon sinks to sources of greenhouse gases, . But that could change under new legislation that the EU Parliament will vote on on September 13, 2022, which would specify that only pellets pressed from waste products like sawdust would count as green energy. Similar issues have arisen from the huge boost in pellet production across the U.S. Southeast along with pollution from pellet plants and deforestation of vital U S coastal forests. That's a problem first called attention to nearly a decade ago, when pellet exports were less than a third of what they are now, Government support for wood burning energy has helped make the EU a major driver of U.S. exports, which passed 830,000 metric tons in June, a nearly 40 percent increase from June 2021. With business booming, industry groups have decried the potential loss of subsidies. But the scientific community largely considers cutting down trees for energy to be a bad move. "Using wood deliberately harvested for burning will increase carbon in the atmosphere and warming for decades to centuries," nearly 800 scientists wrote in a letter to the EU in 2018, the last time EU biomass (wood burning) measures were up for a vote.

Episode 33 L Gerda and European countries' cash handouts to residents so residents can avoid high energy costs
Gerda noted that the standoff with Russia over Ukraine and rising energy prices are rapidly overturning modern European economic orthodoxy. Nationalizations. Subsidies. Cash handouts. Price caps. Profit taxes. It's back to 20th-century economics in Europe. Governments are resorting to old-school solutions, throwing vast amounts of money at the energy crisis engulfing the region, in a bid to avert a political, social and economic meltdown. E U governments have earmarked more than $350 billion to subsidize consumers, industry and utility companies. EU ministers met to narrow down their options for the bloc's direct intervention in markets to grab excess profits, cap electricity prices and subsidize utilities companies. "Government intervention is back in vogue in a really big way," "It's really about building public support through what is going to be an incredibly difficult winter." "It's a special situation that won't last forever."
The German government announced a $65 billion support package, its third and largest so far, that includes direct cash handouts to the most vulnerable consumers and tax breaks to energy-intensive businesses. The Belgian government has handed out $100 to every household irrespective of income. The Greek government has committed nearly $7 billion, or about 4 percent of its annual economic output, in the past three months to subsidize all energy bills in the country. Greece has put a levy on the excess revenues of energy companies that use sources other than natural gas. The Czech Republic announced support measures for the cost of electricity. After cash handouts and subsidies, more direct market interventions may follow. "The electricity market isn't a functioning market because there is one actor, Putin, who is trying to destroy it and to manipulate it," The President of the European Commission said in a speech. "So we really have to react to that. And that is why we are addressing now the composition of the electricity market." The president of the EU unveiled her staff's proposals, including a cap on what E.U. countries are allowed to pay Russia for natural gas, taxing energy companies' profits and suspending rules that make it illegal for governments to subsidize companies to permit the funding of utilities that are burning through cash to buy outrageously expensive fuels to make power. E U energy ministers said they would adopt interventions this month, before the weather gets colder.

Episode 33 M Gerda and Greta Thunberg and her warning to "stop wood burning!"
Gerda noted that some in the E U want to classify heating with wood as "energy-neutral" (carbon neutral) in the future, and continue subsidies for Industrial Wood Burning. Climate activist Greta Thunberg is opposing this measure. She warns: "Stop burning wood!" On September 13, 2022 the EU Parliament will vote on re-announcing guidelines for renewable energy. Heating with wood now classified as "energy-neutral" might continue. It's a thorn in the side of climate activist Tune-berg. "Europe's directly elected representatives must now decide: they can either protect the E U's 'climate goals' from their legal loopholes, or they can start saving our climate." Thunberg said that if the E U's damaging

policies on renewable energy do not change, there will be consequences. “Then the taxpayers of Europe will continue to pay for forests around the world to literally go up in smoke every day.” Greta Thunberg proposes that all subsidies paid for forest burning be used for “real” renewable energy. “Wind power, solar power and geothermal energy,” That’s why Thunberg is calling for a rethink in the E U. “They have to remove wood from the renewable energy list.” If the E U doesn’t, the union of states will opt for more decades of harmful greenhouse gases, and ultimately crimes against human rights.

Episode 33 N Gerda and a letter to E U members before the September 13, 2022 vote, urging EU members to remove subsidies for Industrial Wood Burning

Gerda noted that analyses have shown that burning wood produces more CO2 than burning coal, oil or natural gas. This is true for combustion in small wood burners in households. According to the German Federal Environment Agency, fine dust emissions from wood burning stoves in private households in Germany are now even higher than emissions from exhaust gases from road traffic. Thus, the use of wood for energy from wood burning stoves not only fuels the climate crisis, but also pollutes the air and thus harms health in several ways. Meanwhile, in Europe, wood-based home appliances are responsible for 12.6 billion euros of health-related costs. Gerda noted that, ahead of the vote on 13 September, 2022, on the proposal to revise the EU Renewable Energy Directive (R E D III), E P H A, together with Klimawandel Gesundheit (K L U G), Health and Environment Alliance (H E A L), and DeutscheGesellschaft fuer Public Health (D G P H), has signed a letter to Members of the European Parliament calling for wood NOT to be classified as a renewable energy source anymore. Not only does wood-burning release CO2, but increased exploitation of forests may mean that they are destroyed as natural carbon sinks. Promoting wood burning is also dangerous from a health perspective: a report published by E P H A earlier this year revealed that the health-related social costs caused by pollution from wood-based home appliances in Europe amount to 12.6 billion euros per year. The revision of the Renewable Energy Directive (R E D III) represents an opportunity to make a change that will bring benefits for health and for the climate. E P H A has previously signed a letter addressed to the members of the I T R E committee at an earlier stage in the legislative process. Wood burning harms our health and fuels climate change. A letter from Berlin, on July 9, 2022, read “Dear Member of the European Parliament, On September 13, 2022 you will vote on the proposal to revise the EU Renewable Energy Directive (R E D III). The Clean Air Working Group at K L U G and the signing health organizations H E A L, E P H A, D G P H and KlimaDocs call on you to stop classifying wood as a renewable energy source in R E D III and to end subsidies for wood as an energy source. The promotion of wood as a renewable energy source fuels the climate crisis and has multiple negative impacts on our health. As the World Health Organization and the prestigious Lancet Countdown have underscored many times, climate change harms our health through, for example, extreme weather events such as heat waves, droughts, wildfires, or an extended pollen season. Europe is the region most affected by heat-related mortality in people aged 65 years and older and incurs the highest costs of heat-related mortality globally. In light of the accelerating climate crisis, it is important and right for the E U to increase efforts to expand renewable energy, through the R E D III revision. However, promoting wood as a "renewable" energy source is a misguided approach to climate change mitigation. Analyses have shown that burning wood produces more CO2 than burning coal, oil or natural gas. This is true for combustion in power plants, heating systems, and small wood burners in households. In addition, forests are destroyed as natural CO2 sinks and may even become CO2 sources because of deforestation and other disturbances. Furthermore, wood combustion is a major source of particulate matter emissions and fuels air pollution. In Europe, around 400,000 people die prematurely each year from air pollution. Particulate matter (PM2.5) is absorbed into the bloodstream through the lungs, reaching all organs (even the brain), which can lead to many diseases, including cancer. Burning wood in pellet stoves can produce more particulate matter than burning natural gas or oil. Replacing fossil fuels with wood will therefore lead to an increase in air pollution with all the associated negative effects on health. Wood burning stoves are even more problematic from this point of view. According to the German Federal Environment Agency, fine dust emissions from wood burning stoves in private households in Germany are now even higher than emissions from exhaust gases from road traffic. Meanwhile, in Europe, wood-based home appliances are responsible for 12.6 billion euros of health-related costs. Wood-fired power plants may also emit more particulate matter than coal-fired power plants. Thus, the use of wood for energy in power plants, heating systems and wood burning stoves not only fuels the climate crisis, but also pollutes the air and thus

harms health in several ways. We therefore urge you not to agree to further classification of wood as a renewable energy source and to end the subsidies for wood burning as a renewable energy source.

Episode 33 O Gerda and Switzerland's subsidies for Industrial Wood Burning

Gerda noted that Switzerland has pledged to reach carbon neutrality by 2050, with forest-derived (wood) biomass slated to play a growing role in the country's energy mix, following a motion submitted to parliament in 2019 to fully "exploit the potential of energy wood." That decision came despite warnings from the Federal Office for the Environment noting: "strategies that only increase the use of wood as biofuel are not efficient from a CO2 balance perspective." Wood chips and pellets burned to make energy are one of the few profitable forestry products in an industry that has been losing money since the 1990s to the tune of 40 million francs ($41 million) annually for the past three years alone. Government subsidies also incentivize biomass logging and the downgrading of timber to "waste" wood. The autonomy granted to the 26 Swiss cantons means logging rates and practices vary widely across the nation, as do energy policies promoted and adopted. The canton of Bern produces the lion's share, around one-fifth of all Swiss wood. The European Academies' Science Advisory Council (E A S A C), which includes Switzerland, deems it "simplistic" to call forest biomass (wood) carbon neutral and renewable because most trees regrow too slowly to offset emissions, and anyway forest carbon stocks should be preserved and increased. More than 500 international scientists have gone further, warning that the switch from burning fossil fuels to burning wood is a "false solution" that, per unit of heat or electricity produced, adds up to three times more CO2 to the atmosphere.

Episode 33 P Gerda and Sweden's subsidies for Industrial Wood Burning

Gerda noted how unsustainable Sweden's forestry system is. "Only 3% of Sweden's forestry doesn't involve clear-cutting. That should be pretty shocking to anyone who hears it, given Sweden's reputation as a leader of so-called green practices". Sweden's approach is both devastating and devastatingly simple: treat forests like agricultural fields. Harvest whatever is there, plough the ground, plant new tree plants, and repeat, hopefully. The industry really only cares about what they can harvest today: eventual harvest 80-100 years later is somebody else's problem. The forest industry is inseparable from the paper and biofuel industries – it's often the same companies, and all they want is large volumes, as cheaply as possible. The clearcutting industry and the forestry industry, taken together, in reality emits more CO2 to the atmosphere than all other industries, transportation and all other human activities taken together, in Sweden.

Episode 33 Q Gerda and Balkan countries needing funds for cash handouts to avoid resorting to residential wood burning

Gerda noted that Western Balkan leaders gathered for the Open Balkan summit in Belgrade on September 2nd and called upon the EU for support. For instance, in Albania, where some mountainous regions rely on firewood to get through the cold winters, one cubic metre of wood is currently being sold for up to €60 (7,000 lek), up from €34 two years ago. "It is very difficult for the non-pensioner to afford life with these prices, even an average person cannot afford it, he is forced to go into debt," a local citizen said. In Serbia, around a million households use firewood and more than 110,000 use wood pellets with prices having increased 15% since 13 August. Neighboring Kosovo has seen a price surge of 7.4% between June and July alone, according to official data. Government intervention and fears of illegal logging. Many governments are taking action to protect households, including export bans and allowing more trees to be cut, but there are concerns that illegal logging may also become a solution. In Bulgaria, the caretaker government organized meetings with wood processing companies and urged them to provide wood for the population by reducing exports. Although illegal logging is a crime, the problem is widespread and various studies have shown that the forestry authorities in Bulgaria are one of the most corrupt institutions in the country. In Hungary, the government was forced to partially backtrack on an August decree that relaxed felling rules in protected areas and allowed younger trees to be harvested in forests fully owned by the state, now requiring that "the increased demand for firewood must [be met] primarily by the gradual harvesting of [non-native] acacia trees". The Hungarian government has also moved to limit firewood exports. While not an outright ban yet, it grants the government the power to control exports and the right to first purchase fuel for social purposes and public services, with a possibility to stop sales abroad altogether. Meanwhile, Poland approved a so-called wood allowance of P L N 1000 (€212) per household, to help as many as two million households in the country that burn wood through the winter. In Slovakia, panic over supplies led to calls for an export ban, but the ministry of agriculture ruled this out. However, the Forests of the Slovak republic recently announced they will open reserves for people in response to rising demand so that people can take wood from certain areas under the

supervision of an employee of the company. Beyond the E U's borders, concerns are also on the rise about illegal felling fueled by demand. In Albania, for example, where the central government does not have any initiatives to help citizens reliant on firewood this year, the municipality of Korca has given permission for a total of 0.6 hectares of firewood to be felled. Illegal logging also remains a significant problem in Kosovo, which has lost more than 7,600 hectares of forest in the last 20 years, equivalent to one and a half football fields every day since 2000. There is an ongoing debate about the sustainability of wood-based energy. Bioenergy Europe argues that it is a renewable energy source that will help boost Europe's energy independence. However, environmental organizations are critical of this and warn about the impact of carbon emissions released by producing energy from biomass. Sustainability criteria for biomass to be counted as renewable are laid out in the renewable energy directive, which is currently under revision, with a vote on September 13, 2022.

Episode 33 R Ishan and PM 2.5 pollution in India

Ishan noted that India was the fifth most polluted country in the world in 2021, with PM2.5 levels that were 11 times higher than the WHO's guideline value. The World Air Quality Report states that 63 cities in India were amongst the top 100 most polluted places in the world, with 10 Indian cities ranking in the top 15. Data from the Energy Policy Institute at the University of Chicago suggested that people living in Delhi could add up to 10 years to their lives if PM2.5 levels are brought down to the mandated WHO guideline levels. Moreover, a study done by the Lancet Commission on Pollution and Health revealed that air pollution was responsible for a whopping 16.7 lakh deaths in 2019—almost 17.8 percent of all deaths in India that year. All statistics indicate that India's PM2.5 levels are a major concern, in terms of the impact it has. Researchers from the Washington University in St Louis conducted a study to record PM2.5 exposure and the sectoral contributions to PM2.5 levels in different countries, including India. Their analysis revealed that all residential and commercial cooking, lighting, and heating was the major source of PM2.5 matter, accounting for 28 percent of PM2.5 levels in India in 2017.

Episode 33 S Ishan and a history of air quality monitoring devices, leading to resident-owned PM 2.5 monitors

Ishan noted that a decade ago, the concept of air monitoring was limited to scientific or governmental use only. With more awareness and technological advancement, handy air monitoring sensors have become household items.

Our modern lifestyle, which we owe to the industrial revolution, has become an indirect threat to our planet, and in turn, to our lives. All parts of our environment have been contaminated—water, air, soil, and food. Air pollution from indoor and outdoor sources represents the single largest environmental health risk globally. As per W H O, seven million people die prematurely each year due to air pollution, while 3.2 million of them are exposed to residential pollutants arising from cooking, heating, electricity, and dust. It's only now that we are realizing how polluted air can be hazardous. Consider the 1800s when canary birds were said to have saved numerous lives of miners in Britain by detecting high concentrations of carbon dioxide, carbon monoxide, and methane in mines. Now, we rely on low-cost, data-efficient technology and innovation to detect such toxic gases. Around 2006, a group of artists, activists, and technologists came up with A I R—a portable air monitoring device enabling people to find air pollution hotspots in their neighborhoods and transmit real-time data to a website. A few years later, Pachube and Wicked Devices launched a low-cost sensor that carried 800 quality-sensing eggs to measure carbon monoxide, nitrogen dioxide, temperature, and humidity. In 2014, HabitatMap launched AirBeam, an open-source PM (particulate matter) sensor where users crowdsource data on the AirCasting app and website to vividly show a region's PM 2.5 levels. Over the years, keeping technology open-source has led to a significant shift in low-cost air monitoring technology. Agencies and governments. The US Environmental Protection Agency put together its research and tips on low-cost sensors in the Air Sensor Guidebook in 2013. W H O has guidelines on the recommended air quality levels for countries. The latest U N Environment Program's Actions on air quality report noted there were large gaps in the monitoring of air quality. The government of India launched the National Clean Air Program (N C A P) to curb air pollution levels across the country. In 2021, the Delhi government installed two smog towers in the city to monitor and clean the air. These 24-meter-high towers record PM 2.5 levels in the air and are said to purify the air within a kilometer radius around the structure. Since the pandemic, people have become more aware of the need to monitor the quality of air in their homes and offices. Now, evaluating air quality is as easy as booking any service online. Handy air monitoring plug-and-play devices can be set up in homes to check air quality. The data collected through these sensors are presented to people in an easy-to-read report and solutions are suggested accordingly. Philanthropists are also investing in projects that improve AQI among low-income communities. Clean air is critical for each human being. We're seeing a rise in the demand for air monitoring and cleaning services,

even for indoor spaces. From a bird to a mobile app, to wireless technologies, one can now test the air quality of their homes with small, lightweight plug-and-play air monitoring sensors.