

# Libation Migration: Beer, Wine and Climate Change

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**Greg Dalton:** This is Climate One, changing the conversation about energy, the economy, and the environment.

**Greg Dalton:** America's most popular alcoholic drinks are taking a hit from climate.

**Esther Mobley:** It's too bad that people aren't just motivated thinking about the problems in the abstract before we get to talking about IPAs and Cabernet.

**Greg Dalton:** Disruptions from drought, fires, and rising temperatures have brewers and winemakers scrambling to deal with the new normal.

**Dan Petroski:** When we start talking about wine and climate change we're talking about the agricultural impacts of climate change.

**Greg Dalton:** Can beer and wine drinkers help convince people of the need for climate action?

**Kaite Wallace:** I do have a lot of hope that if we're eyes wide open about what we're facing that can really come up with the number of solutions to address it preemptively.

**Greg Dalton:** Beer and wine in a disrupted climate. Up next on Climate One.

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**Greg Dalton:** How will beer and wine taste different in a warmer world? Climate One conversations feature oil companies and environmentalists, Republicans and Democrats, the exciting and the scary aspects of the climate challenge. I'm Greg Dalton.

**Greg Dalton:** Americans 21 and older drank 26 gallons of beer and cider per person in 2018. But extreme weather due to climate change has started to disrupt the business of brewing.

**Kaite Wallace:** Beer is over 90% water and being headquartered here in Colorado we are very prone to drought and forest fires.

**Greg Dalton:** Katie Wallace is director of social and environmental impact at New Belgium Brewing, maker of Fat Tire and other craft beers. Beyond water, a hallmark of the craft beer movement has been the variety of creative ingredients used in the brewing process - ingredients whose availability has become more volatile due to disrupted weather patterns.

**Esther Mobley:** One of the crazy things about climate change for wine is that in the short term it's kind of a lot of good news among some not so good news.

**Greg Dalton:** Esther Mobley is the wine critic at the San Francisco Chronicle, where she writes about California wine, along with beer, spirits, and drinking culture more generally. Americans drank nearly one billion gallons of wine in 2018, thanks in part to an expanding global map of wine-growing regions.

**Dan Petroski:** You get to see more consistency and more quality throughout the world. So it's never been a better time to be a wine drinker.

**Greg Dalton:** Dan Petroski is a winemaker at Larkmead Vineyards in the Napa Valley north of San Francisco. I began our conversation asking him for the big-picture impact of climate change on wine.

**Dan Petroski:** It's an agricultural product. When we start talking about wine and climate change we're talking about the agricultural impacts of climate change. So that's first and foremost in my mind. It's not about our beverage that we drink together at night at home and over the dinner. It's more about being an agricultural product.

**Greg Dalton:** So it's grape production. How is climate affecting grapes? We tend to think of them as kind of delicate and tender.

**Dan Petroski:** From an insider's point of view we also think of grapevines as being very resilient. They could handle stress and it's often said that the best wines of the world are grown in some of the most stressful conditions. Whether it be soil conditions or weather conditions. Napa Valley, where I live and work happens to be one of those areas where it can be quite stressful due to heat. A grapevine unto itself like most fruiting plants is a perennial so it happens it does the same thing every year. So we can actually track the impact of climate or the impact of decisions made or farming practices on how it impacts the perennial aspect of the vine's growing season.

**Greg Dalton:** Katie Wallace, water is the number one input into beer. Water is one way that I think people may feel climate more directly and locally. So how is climate affecting water and therefore beer?

**Katie Wallace:** Sure. Beer is over 90% water and being headquartered here in Colorado we are very prone to drought and forest fires. In 2012, we actually had the second largest forest fire in Colorado, which scared the use of our river here. And we had to fall back on contingency plans that we're also quite vulnerable to fire that year as well. So we've nearly escape the perfect storm that would cost us to lose access to significant amount of water in our watershed. You also see brewers in California that received during the seven-year drought there, received water reduction mandates in how to understand how to manage production and employment through those times as well.

**Greg Dalton:** Right. That was a big concern for Sierra Nevada Brewery when there was the multi-year California drought. And Katie Wallace, there's also some divisions between the eastern part of the country for water therefore brewing then there was in the western part. What's the east-west

divide on water and climate?

**Katie Wallace:** Sure. In the east, brewers have more issues with contamination and growing of invasive species and algae. Our brewery in North Carolina is actually higher up in the mountains but we are aware of some water quality issues that are becoming more problematic as temperatures rise and there are fewer deep freezes and cold days.

**Greg Dalton:** So it's not only a matter of the volume of water. It's the quality as well as access to it, Katie?

**Katie Wallace:** Absolutely. And we see that here in the west too. So when our water systems are more stressed and whether we're dealing with algae, invasive algae on the east or forest fires in the west, water quality can be affected any time. And the water actually lends flavor attributes to the beer itself. So as those changed then we're having to adjust for that in the operations.

**Greg Dalton:** Esther Mobley, what is smoke taint?

**Esther Mobley:** Smoke taint refers to when there's wildfire as there frequently is in the west. Certain molecular compounds can take hold in grapes. And depending on when it happens during the growing season the grapes can become more susceptible to taking on certain compounds in a way that ultimately will impact the wine that's made from them. The main culprit is something called guaiacol that actually occurs naturally in grapes in smaller concentrations. It's what gives Serra [ph] that smoky delicious taste. But when you have this really extreme high levels of it, the grapes can kind of taste like an ash tray. Smoke taint has become a major issue in California wine over the last couple of years. It's certainly not new, just as wildfires aren't new. And wineries here have been dealing with those for quite some time. But the last couple of years there's been as wildfires in Northern California have happened right in the midst of different points during the growing season, especially in the kind of late summer period. It's really becoming, people don't know how to deal with it. Are the growers responsible are the winemakers responsible? What happens if you can't make the wine? The science about how to maybe mitigate the effects of smoke taint isn't really as advanced as it should be. So that's certainly a big question for wineries going forward. And given that wines are on a kind of delayed release cycle the 2017 wildfires which really severely affected Napa and Sonoma counties. Those wines are kind of only now just getting out into the world. So we have yet to see whether a lot of wineries don't sell wine from that vintage or if we can taste some smokiness from them or maybe not at all.

**Greg Dalton:** Do we know, Esther Mobley, if those fires had an economic impact on the industry?

**Esther Mobley:** Certainly. And a lot of that was related to tourism. I mean where Dan lives and works depends so heavily on tourists. Any of you here in San Francisco know that within a few months it was really life kind of back to normal for some people up there and certainly for the kind of main wineries. But the lingering perception of the whole area being ravaged seems to have affected a couple businesses that we spoke with at the Chronicle cited their closure as due to that.

**Greg Dalton:** So people think, oh it's bad up there so I don't want to go there. It might be uncomfortable to see or unhealthy to go there. Do we know, Dan Petroski, if these climate impacts are having a price impact in the inputs and therefore the final product. Are we seeing, is the price of wine going up because of these things?

**Dan Petroski:** The price of wine and profit margins do get impacted across the board with regards to climate activity. Whether be a drought conditions or heat waves or extended heat waves or floods because it's all about the major part of the price is built into the cost of the grapes. And so if your

great yield is lowered by half, that means you've done the same amount of energy and effort and work and financial inputs into the farming practice but you received half of the raw material. So you have two choices. To take a hit in your economics or to raise your price to kind of normalize your business line.

**Greg Dalton:** Katie Wallace, there was a report a couple years ago that grabbed headlines about the impact on beer supply and therefore the prices that would be from heat and other impacts got headlines around the world. But the biggest impacts were I think in Europe. Are we seeing that yet the impact of higher beer prices because climate is hitting the supply chain?

**Katie Wallace:** Not quite yet. I think we're kind of the phase of the canary in the coal mine. That study actually illustrated the worst case scenario which we hope to ultimately avoid. But it's certainly is something that we're looking at and already if you're looking at the leading indicators you are seeing changes to quality that we have to adjust for and near misses on impacts to availability. And those two things as they progress as they have been are going to lead to price impacts. I imagine brewers will try much like the wineries will try to absorb some of those increases in their cost for some time and then eventually we'll see if that is passed on to the customer. But of course we're really hoping to push forward and be proactive and try to avoid the worst of the worst.

**Greg Dalton:** The growing regions for some of these things are expanding. Katie Wallace, you know, most of the hops most of the hops are grown in Idaho and Washington. Is beer gonna migrate north or cannot migrate further north?

**Katie Wallace:** Yeah, hops, about 95% of the hops in the United States are grown in Washington, Oregon and Idaho because of the optimal climate there. And also because of the long daylight the extended daylight hours that they have in the north there that help to increase the yields per acre. And so moving further north you're getting into colder temperatures. Moving any further south, you get into lower levels of light in the growing season which will impact the hops. They don't have a lot of room to move around. And then barley is grown in northern latitudes of Montana, Alberta, Canada and a bit of Colorado. And so as other crops need to push north due to pest invasions or other climate change induced causes. We really don't have much further to go before we hit the tar sands up there in Canada. So barley is one of those crops that is not a primary crop for a lot of farmers and it's oftentimes a rotation crop. And so that's an easy one to squeeze out as we push more crops further north.

**Greg Dalton:** Yeah, wine from the tar sands doesn't sound very appealing. Esther Mobley, people don't think of Canada wine doesn't come to mind. But wine is starting to move up there. So are we gonna start seeing some Canadian wines is that an opportunity there's some real short term positives here for some people and regions.

**Esther Mobley:** Certainly. And Canada does have a major wine industry and the rise of wines, especially from British Columbia over the last decade has been undoubtedly partly due to climate change, as well as to their own talent and hard work. But yeah, that's one of the crazy things about climate change for wine is that in the short term it's kind of a lot of good news among some not so good news. But thanks to warming temperatures, sparkling wine production is now possible in England a place that would have always been considered way too cold to grow wine successfully, same with parts of Canada. And we're seeing the global map expanding as you're alluding to where it's possible to make wine. That's true also at higher altitudes. And it's also true in regions that have produced wine for a long time like Burgundy in France or Oregon but if it always have kind of variable growing conditions, it might be too cold, it might be too rainy to have a great vintage. They can now count on kind of consistently having a warm enough, ripe enough vintage to have a great, great crop every year.

**Greg Dalton:** The New York Times did a recent piece on kind of the effect on the wine industry. They talked about the elevation expanding map. Dan Petroski, what are some other impacts that are happening because of climate?

**Dan Petroski:** There's more economic impacts with regards to workforce labor impacts. I'd like this conversation about the shifting of climate throughout the globe in the wine industry because you get to see, as Esther alluded to, you get to see more consistency and more quality throughout the world. So it's never been a better time to be a wine drinker. But that shift is still continuing and we're gonna have to be worrying about that 2 to 3 decades from now. And we're gonna be thinking about other grape varieties because our region of choice may not be precisely proper for those grapes that we've been historically and traditionally planting. And again the example of England and being able to grow grapes today so that's shifting in California as well. So Cabernet may not be the great variety of Napa Valley, 20 years from now.

**Esther Mobley:** And it's just worth noting for those who don't live and breathe wine. Every grape variety has a kind of sweet spot temperature and climate-wise and even sometimes soil-wise. So you can grow riesling really successfully in chilly, Germany, but you can grow a great like Tempranillo in kind of desert like hot Spain. So when we're talking about can Napa continue to grow Cabernet we're looking at Cabernet wants this kind of certain band of temperature, we see that Napa Valley's temperature is consistently rising over time. Theoretically there it really is a point where it's too hot for that grape variety but not too hot for some others. And so thinking about other parts of the world, Mediterranean climates that grow other grapes really well despite a lot of heat is I think what a lot of winemakers like Dan are looking to.

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**Greg Dalton:** You're listening to a Climate One conversation about beer and wine in a warmer world. Coming up, we'll look at the impacts of climate change on the *people* who work in beer and winemaking.

**Esther Mobley:** It's making the issue of figuring out mechanization and vineyards even more pressing because there's just not as many people to do this work. And those who are doing the work it's becoming more difficult all the time.

**Greg Dalton:** That's up next, when Climate One continues.

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**Greg Dalton:** This is Climate One. I'm Greg Dalton, and we're talking about the impacts of climate change on beer and wine with Esther Mobley, wine reporter at the San Francisco Chronicle; Dan Petroski, a winemaker at Larkmead Vineyards in Napa Valley, California; and Katie Wallace, director of social and environmental impact at New Belgium Brewing in Fort Collins, Colorado. As Katie mentioned earlier, craft brewers have gotten creative with a whole variety of flavors in their beers. She explains how less predictable weather is making companies scramble to sustain that special taste.

**Katie Wallace:** A couple of years ago when the hurricanes went to the South in the United States here, a lot of the orange crop was decimated. And so it took us just over a month to scrap together a couple of orders that equal the amount of orange peel we needed to make our Fat Tire Belgian White. So it certainly makes it a little bit more of a roller coaster to possibly secure some of those ingredients. I think barley has to produce a certain amount of starch that become sugar eventually once it's melted which is our extract. And that actually needs a really specific growing environment

for that. So we had an occasion a few years ago where barley sprouted across most of the barley growing regions in North America because of a warm and wet harvest season. And so we're actually not necessarily at that stage able to switch to a different ingredients it's something that we had to dip into reserves for and if that were to happen multiple years in a row, we're starting to get into just availability issue overall. But yeah I think that as certain ingredients become more volatile that it really reduces the amount that we have to play with. And that's kind of the keystone of the craft beer movement is that we have all of these fun ingredients to play with. You can really put all kinds of fruits and spices and hops into beers. And if anything I think you'll just narrow the availability of that but crop growers are creative I'm sure come up with some new flavors for sure.

**Greg Dalton:** So we're talking about some of the grand picture of climate conversations. We're talking about some inconveniences and some high-class problems here. I do want to bring in the workers and people who are often not part of the conversation and overlooked. And as temperatures rise and wildfires become more common, conditions for farmworkers are getting more dangerous. Armando Elenes is a secretary treasurer of the United Farm Workers. He was an immigrant farmworker himself as a teenager. We asked him how workers in the legendary Napa and Sonoma wine country have been faring and how the wine industry can get better help them stay healthy.

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**Armando Elenes:** We represent almost a thousand farmworkers up in the Napa Valley that work in the vineyards. When the fire hit up in that region workers were unprepared. The employers were unprepared. You know, when you don't work in a heat as much such as in the Napa Valley where it doesn't get as hot, but then, all of a sudden it does get hot. It's something that takes people by surprise because they're not acclimated they're not used to working those type of extreme temperatures. So sometimes that's actually even worse versus somebody let's just say in the south working valley that gets acclimated and is more used to working in those temperatures. You know, most of the workers done piece rates. Most workers get paid by, you know, how much they pick. And so that puts a lot more stress in the body especially the heat and temperature is climbing. It puts a lot of pressure for the grower to also get that crop off the ground and get it harvested or lose money. And same thing for the employee they're worried about losing income. As these temperatures increase, as the fires are more exposed. I would really urge the wine industry so that okay what can they do proactively to not give that worker that incentive to continue working and or provide them an incentive to be safer. And provide them with safety nets so they can stop working because obviously that could have a much bigger impact on their brand and worker lives.

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**Greg Dalton:** That was Armando Elenes, secretary-treasurer of the United Farm Workers. Dan Petroski, your response there. A lot in there about worker vulnerability working conditions pressure is on them. And also the Central Valley where most wine is made it is really, really hot.

**Dan Petroski:** Very hot. We do most of the picking 24 hours a day. So a lot of it happens when the sun goes down, especially during harvest time it's the most stressful time when you're actually moving 40-pound lug boxes around. A single farmworker could move a couple of thousand pounds a day by themselves. And then they'll move from one site to another site usually in the dark. And we're doing that for reasons of heat because we don't want the -- we have rules and regulations to support our farmworkers to keep them out of the inclement weather. So once it hits a certain degree we stop work. But most work started at day break during the non-harvest season we do our best in order to support the efforts they do. Because the romance behind the hand work that is done by our farm workers and our laborers is second, you know, the romance lifts the industry but the work that they do is second to none with regards to energy, effort and they need to be supported as

much as we possibly can.

**Greg Dalton:** Esther, your thoughts on worker vulnerability.

**Esther Mobley:** We've written a lot extensively about this. And what's happening is for the reasons where you are describing is that fewer and fewer people want to be farmworkers in California. And wineries throughout California are having a lot of trouble finding workers to do this work. And at the highest then wineries they're paying quite a bit to highly skilled workers. I spoke with one vineyard management company last year that was saying at the peak of harvest, their farmworkers were earning \$45 an hour. And so I think it's making the issue of figuring out mechanization and vineyards even more pressing because there's just not as many people to do this work. And those who are doing the work it's becoming more difficult all the time.

**Greg Dalton:** Katie, are robots coming into beer?

**Katie Wallace:** We have a robot at our brewery it palletizes our beer it's pretty mesmerizing to watch. But yes, I think automation is one of those things that, you know, we are subject to as well and probably most impacted. I would say coming up, the biggest impact might be over with our truck drivers that distribute beer across the country with over the road trucks where we're looking at driverless vehicles. But I think it's really fun there's one job here that technology can't seem to infiltrate and that is our sensory lab. So far technology hasn't been able to replicate the human nose and mouth and sensory organs to be able to test the quality of our beer and the tastiness of it. But to some degree we are impacted and at the warehouse level and the driver level you'll see more of that.

**Greg Dalton:** We're talking about warm beer and hot wine. My guests are Esther Mobley, reporter with the San Francisco Chronicle. Dan Petroski, is a winemaker at Larkmead Vineyards in California's Napa Valley. And Katie Wallace, director of social and environmental impacts for New Belgium Brewing in Colorado. Dan, Katie mentioned distribution. Let's talk about some of the economics the business model of moving around heavy liquids around the country and heavy glass on trucks running on diesel. So operational impact of this industry.

**Dan Petroski:** The glass which seems wonderful because it's recyclable it's not plastic. But the downside of that is it's about 40% to 45% of the greenhouse gas emissions in the process. So what it mean by that is you have to think about the start of it. Glass becoming, you know, being made from sand and how hot you have to use fossil fuels and how hot you have to get it in order to create that bottle. Most of those glass bottles for the wine industry are created in California, Mexico, Dubai, France, Spain, and it get shipped over in a container to America then redistributed into a warehouse which is temperature controlled and then sent to the winery and then filled with wine. And now you're talking about a 40-pound case of a wine that goes to another warehouse truck to another warehouse that's temperature controlled and then sent on a truck across the country to the East Coast. So you start adding all that up and it is become it is 40% to 45% of the industry's greenhouse gas emissions. So not only the supply chain, but the distribution network. So from the start to the finish to the bottle ending up in your home on your table. It's something we need to be thinking about as an industry, if we are gonna have an impact on slowing things down with regards to the changing of the climate.

**Greg Dalton:** So what's the alternative to all that, just hearing all that from the making of the -- fossil fuels, making the bottle all the way, all the trucks, all the way to a refrigerator. What's the alternative what's the solution?

**Dan Petroski:** I do think that, you know, we all know change is hard, especially in an industry like

wine. We're still struggling through whether we can put screw caps on a wine bottle instead of a cork because cork is traditional. And making that change and us having to go through that psychoses of change it's very difficult for us and taking wine out of a bottle putting it in a can putting it in a single serving. You're just doubling the footprint at that point. Not saying that that's the answer, I don't really have an answer to glass. Lighter weight glass is definitely an answer closer to home businesses like Gallo which produces one of every five bottles of wine consumed in America. They have their own glass factories. So they're bringing a lot of that manufacturing in-house and keeping it local. Reducing the weight of those glass bottles. So they're doing a lot and to benefit their own supply chain as well as their distribution networks and the weight of all their --

**Greg Dalton:** But they're doing that for cost reasons. Gallo is not really on the sustainability edge of this, right?

**Dan Petroski:** They're not. But at the same time they're doing a better job than the majority of the industry because of the localization and because of their focus towards lighter weight glass which cost less money to produce and therefore can keep their bottle cost price down.

**Greg Dalton:** Katie Wallace, same problem for beer. The glass is the biggest part of the greenhouse gas footprint of a bottle of beer. What are the solutions what are the options, I mean plastic bottles?

**Katie Wallace:** Well, you know, cans are ever more popular especially in craft beer right now. But we did a carbon footprint study to compare that are light weighted bottles with our cans and it turns out they're roughly similar. The beginning of the lifecycle of cans is pretty destructive and smelting aluminum oxide into aluminum is also pretty energy intensive. And so increasing recycle content improving collection systems across the nation is an opportunity for improvement. The recycled content melts at a lower temperature and therefore requires less energy than diverging materials for glass and for cans. And then returnable bottles just a really interesting thing. If you live in Oregon and you have access to the BottleDrop program or in parts of California. Moving to returnable actually decreases the emissions by about 80%. And much like the wine industry our containers contribute about almost 45% of our total emissions. And so that's something that I see really the main way that we can drop greenhouse gas emissions across our lifecycle would be going to refillable bottles at some point.

**Greg Dalton:** It's been a long time since the Bottle Bill was passed in this country. Katie Wallace, you've done some research, looked into some research by others in Florida, Maryland and Massachusetts about industry saying that basically deposits will hurt sales. Is that actually the case economically?

**Katie Wallace:** Yeah, the data suggest that it's not actually the case. Only 10 states in the U.S. have a Bottle Bill and the majority of all of the recycled content that you have actually comes from those 10 states. So in Colorado for example, our bottles have less than 15% recycled content. But we could collect at least five times that amount if we had a Bottle Bill in our state. And so that is an issue that I think there's a lot of opposition because of fears that are ungrounded in data. And there's an additional cost to sometimes the retailers or the distributors that have to collect the bottles as well. But there are some deposit programs that work better than others, more business friendly. And the Oregon model again, I keep talking about Oregon, but that model is also much more business friendly and successful in actually redeeming the containers increasing the recycle content.

**Greg Dalton:** We're talking about beer and wine and climate change with Esther Mobley, Dan Petroski and Katie Wallace. I got some quick questions for you. True or false. Dan Petroski, you



have drunk wine out of the box?

**Dan Petroski:** True.

**Greg Dalton:** Esther Mobley. True or false, you think wine bottles with screw tops are legit?

**Esther Mobley:** True.

**Greg Dalton:** True or false. Katie Wallace, wine drinkers are smarter than beer drinkers?

**Katie Wallace:** Oh come on.

**Greg Dalton:** True or false. Dan Petroski, consumers are willing to pay \$100 to drink wine out of a tin can?

**Dan Petroski:** False.

**Greg Dalton:** Katie Wallace. True or false, beer giants are moving to lock up supplies of ingredients and lock out small brewers?

**Katie Wallace:** Inherently that is happening.

**Greg Dalton:** Esther Mobley. Your favorite varietal of wine?

**Esther Mobley:** Oh no. No, no. That's like asking if you had a favorite child. If you'd multiple children. I love it all.

**Greg Dalton:** Okay, I guess we'll accept that. Dan Petroski, your favorite beer?

**Dan Petroski:** A craft brew out of my hometown, Brooklyn, New York called Other Half.

**Greg Dalton:** Alright, last one. Katie Wallace, a flavor of craft beer that you can't stand?

**Katie Wallace:** There's none, I don't think I had a beer. I would say an expired oxidized beer.

**Greg Dalton:** Yesterday's beer you mean.

**Katie Wallace:** Stale beer.

**Greg Dalton:** Okay. Alright, let's give them a round of applause for getting through the lightning round.

[Applause]

The more about I talk about and think about climate change it kind of, it ultimately gets down to power, Dan Petroski. So how do you think about climate kind of impacting hurting the big players in the wine industry there's been a lot of consolidation like all industries. And they'll be able to move things around and there's not much middle left in America middle size companies, middle class. So think about power and climate and wine what's that look like in the future?

**Dan Petroski:** Oh, I'm excited about it there's never been a better time for leadership in our industry, the wine industry. And I do think there are two families that are generational families, not public companies but large multinational companies. One out of Spain the Torres family which has holdings in South America and in California. And then also Kendall-Jackson the Jackson family

which is a multinational with Australia, South Africa, Italy and their most famous vintners reserve Chardonnay in California. These are two families that have taken such strides to set a program in place that's gonna be releasing soon about greenhouse gas emissions and thinking about their wine production from raw material to your home into the restaurant table. And they're taking it backwards and they're looking at all the aspects of we talked about earlier from the supply chain the raw material distribution networks, trucking weight of bottles. And they're doing things that I think are admirable and that are leadership. And I think at that level we are gonna be very fortunate that we'll hopefully have a nice tail of a small businesses that can kind of glom onto their successes what's working for them. So I'm really excited.

**Greg Dalton:** Katie Wallace, what are you seeing in the beer industry in terms of was a big companies leading or is it small companies leading. We hear about family companies leading for their own preservation and sustainability.

**Katie Wallace:** Yeah, I think there are a lot of medium size companies that have been leading for quite a while. Hearing the craft beer ethos that are, you know, really grounded in community and a healthy ecosystem. And the good news is that we see the bigger companies and even some that are publicly traded that are right now in the last several years investing quite a bit in some sustainability initiatives. I know that they are starting to analyze the risk and realizing that this is actually the cheaper way to go about it is investing sooner than later and reducing their own emissions and their exposure to risk. And I think the bad news is when like as we talked about earlier, our supply chains are going to be more volatile and problematic. They already are starting to become that way. And the smaller companies, your neighborhood brewery that's just the taproom, those are the companies that have a harder time getting contracts because of their scale. And as the supply chain becomes more volatile in quality and availability the people the companies that don't have those contacts are gonna be more subject to the shortages and the reduced quality. So that's something that we see as a little unfortunate, that's the American dream, you know, that craft beer around the corner and the entrepreneurs that run that. And unfortunately, you think that those are gonna be the ones that are at greater risk down the road.

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**Greg Dalton:** You're listening to a conversation about beer, wine, and climate disruption. This is Climate One. Coming up, does talking about climate's impact on alcoholic drinks make it easier or harder to discuss climate change?

**Esther Mobley:** When we say the beer is going away that's what really gets people to listen. I mean, is it more important to get people to listen at any cost?

**Greg Dalton:** That's up next, when Climate One continues.

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**Greg Dalton:** This is Climate One. I'm Greg Dalton. We're talking about warm beer and hot wine with Katie Wallace, director of social and environmental impact at New Belgium Brewing in Fort Collins, Colorado; Esther Mobley, wine reporter at the San Francisco Chronicle; and Dan Petroski, a winemaker at Larkmead Vineyards in Napa Valley, California. Dan explains how extreme weather is making climate less of a dirty word on the agricultural side of winemaking.

**Dan Petroski:** We are small family businesses up and down the coast of California. And these small family businesses deal with everything from the agricultural raw material to manufacturing of their product. Then to the hospitality of bringing people into their spaces and serving them a glass of wine to the sales and marketing and knocking on doors and restaurants and retailers in the state

of California to dealing with national wholesale distributors and moving their products nationwide. So it is one of the most integrated businesses so I think one of the five of them is in their face every day with maybe if, you know, for lack of a term, a small fire that they have to put out. And so I think the agricultural side of it is just it's that perennial crop that keeps coming. And if it's a good year, it's a good year. If it's a great year, it's a great year. If there's a low yield, it's a bad year financially. So I think that's been the approach towards farming and our product but I think that is now changing because it's the forest from the trees conversation. How much can you actually see when you're a business that deals with five channels of activity from the raw material to manufacturing to distribution to hospitality wholesale national sales. I mean it is a big endeavor for a single company. Most places don't do all those things.

**Greg Dalton:** Esther Mobley, does climate come up in the wine conversations you have if you don't bring it up?

**Esther Mobley:** It frequently does come up in my conversations in my reporting even when I'm not writing a climate change story per se. But I mean, I cover California wine at large, and so it's really hard to have a conversation with winemakers when you don't talk about the weather that's all they really want to talk about. Wildfires, all the other things throughout the year that might be threatening their crop. And their sustainability practices whether they farm organically, etc. So it comes up a lot and when it doesn't, I often bring it up even when that's not the main subject at hand.

**Greg Dalton:** You mention organic farming there's also dry farming. We've mentioned a little bit of mechanization, other technological solutions. We haven't touched on GMOs yet, you know, some agencies are looking for America they kind of look for that tech fix like what can be the tech fix, engineer our way out of this?

**Esther Mobley:** Well, there's ways to kind of potentially enhanced drought tolerance without doing genetic modification for grapevine. Simply planting the scion of the plant onto a different kind of rootstock that's where a lot of the research is happening. Certainly what a lot of people drink that's in the grocery store shelves is not the kind of wine that Dan is making that's really the crème de la crème of what California can produce. But even when you're buying your boxed wine at the grocery store it still says California. And wine is really inextricable from place. So it's not just a matter of if it gets too hot here can we start growing these grapes over there where it's maybe a little cooler. It would really be a kind of existential shift away from thinking of Napa Valley wine, Sonoma wine, these places that are just completely tied up in the character of the wine the quality of the wine real and perceived. And so I think it's gonna be harder to engineer our way out of this one than some other agricultural products.

**Greg Dalton:** I've lived in California since the 1960s and I just noticed the expansion of, you know, vineyards taking over places. South of King City a place 100 and 200 miles south of San Francisco is now there's grapes everywhere. Esther Mobley, are we gonna see fallow land are we gonna see that go back to what it was before because wine is no longer sustainable or are we just gonna see a stylistic shift?

**Esther Mobley:** Hard to know. I think certainly in Monterey County where King City is there's a lot of other crops that are profitable compete with wine are easier for laborers maybe aren't as volatile to, you know, those little cuties things the tiny little --

**Greg Dalton:** Oranges.

**Esther Mobley:** --citruses, oranges. Some growers the great growers in Monterey County have been like those are taking away all night labor. So and that may happen and the other crop that may

take away some of wine's land share is cannabis. But wine grapes as far as an agricultural product go are a pretty lucrative one. So that should insulate them to some degree.

**Greg Dalton:** Katie Wallace, what's your biggest concern when you think about climate change, you look ahead. You know, if it's not orange peels, what's the biggest concern when you think about?

**Katie Wallace:** It's more broadly the volatility. If there is a big shift the market can and the job workers can typically adjust to a shift. But when there's multiple shifts coming from multiple different directions that dynamic volatility is just something that is gonna be harder to respond to. As a business, I don't think that, you know, our communities and destination and our businesses are just equipped well enough to respond quickly continuously. But I have a lot of hope in the ability for humans to come together and be resourceful and inventive in times of need. I hope it doesn't have to get to a place of extreme hardship before we do that in our businesses or in our communities and lives. But I do have a lot of hope that if we -- eyes wide open about what we're facing that can really come up with the number of solutions to address it preemptively.

**Greg Dalton:** And we're gonna go to audience questions. I want to get bright spots before -- Dan, you've already said that it's a great time to be a wine drinker. And you said Esther, that it's a good time for short term. What are some other bright spots, Dan's smiling, so he must have a good one.

**Dan Petroski:** No. I come at it from a wine drinker's perspective first and the winemakers perspective second. And it's just truly we can drink a great wine throughout the world due to the lack of variability over the last two or three decades to the ability for grapevines to ripened more effectively and yield larger crops due to consistency. But I echo Katie's hopes and fears about the future variability. So the bright spots right now are just if we can ride this way, I do think we will have a nice runway to continue to drink well, eat well in an agricultural world that we live in. But, yeah, the wine industry right now is it's better than it's ever been. So as long as we can kind of take that and take that momentum and you ask about what the future looks like take that momentum and try to protect and preserve that momentum, I think we're gonna be in a really good spot for a decade or two to come.

**Greg Dalton:** Esther.

**Esther Mobley:** Yeah. In addition to the obvious that there's more great wine available from more parts of the world than there'll ever were. To me, one of the great bright spots is that it's hopefully gonna be a catalyst for different parts of the wine industry coming together to solve the problem collaboratively. I mean if there ever was one that really was clearly gonna impact everyone and demanded everyone's attention this is it. And so I'm looking forward to that.

**Katie Wallace:** Can I offer a bright spot too?

**Greg Dalton:** Sure. We won't leave you in darkness, yes.

**Katie Wallace:** Okay. Thanks. I think a couple of things that are really exciting right now more people are talking about regenerative agriculture, soil health and carbon sequestration throughout the farming practice. So I haven't seen that level of momentum over the last 10, 15 years that I've seen just in the last two. So I think what is now one of our greatest impacts could eventually become a part of the solution which is really exciting for agricultural based products. I'm also really encouraged to see more businesses and policymakers on both sides of the aisle looking at federal carbon limits and making commitments towards hundred percent renewables. Because I do think that this isn't something that any of our companies can solve alone and it's going to take a systemic

shift and that's the only thing that's gonna get us there quick enough. And so it's really great now that there's people across the aisle and across corporations that are seeing the value in that these days.

**Greg Dalton:** Soil is sexy and may save us. There's a lot to that. We're talking about warm beer and hot wine with Esther Mobley, reporter with the San Francisco Chronicle. Dan Petroski, with Larkmead Vineyards in Napa Valley. And Katie Wallace, with New Belgium Brewing. We're gonna go to audience questions I invite you to join us. So please with the microphone back there if you have a quick comment or question. You don't need to be 21 to ask a question, looking out at the audience here. So just please go up and briefly identify yourself. If you need help keeping it short, I'm here for you.

**Female Participant:** Hi, I'm Annie, I'm a brewer 21st Amendment. I was just wondering if one of you would like to talk on using the decline of a luxury good to motivate people into action over climate change whether that's really a responsible thing to do.

**Greg Dalton:** Fair question. We're kind of in elitist bubble up here talking about these things. Sometimes luxury brands lead, Tesla being an example. Who'd like to tackle that?

**Esther Mobley:** I was rereading material about the beer study that you all were citing earlier. And the authors of that study who are researchers who have obviously been doggedly researching climate change. One of them tweeted this is the only thing that was garnering attention. We've been talking about all sorts of things related to climate but when we say the beer is going away that's what really gets people to listen. I mean, I guess, you know, is it more important to get people to listen at any cost. Maybe we have to find some way to kind of make these things sexy if we're gonna somehow convey them to a really, really large audience. But I share your cynicism that it's too bad that people aren't just motivated thinking about the problems in the abstract before we get to talking about IPAs and Cabernet.

**Greg Dalton:** Chocolate, I would add in there. We did a program on chocolate once and that got people's attention. Chocolate. Let's go to our next question. Welcome.

**Male Participant:** My name is Lee, I work at Flatiron Wines and Spirits here in the city. There's two, three a lot of organizations that sort of help maintain the status quo, Dan specifically, have you or anybody of you spoken to in the wine industry thought about creating an organization that would support kind of a clearing house for these ideas and these efforts?

**Dan Petroski:** I echo a little bit what Esther said earlier about different organizations and there's not a lot of clarity to what some of them are doing and why. I don't think there is one right now in the wine industry that is speaking out perfectly on the subject matter. There is the Porto Protocol, which came from a family of winegrowers in Portugal who's family businesses rely on making and growing wine grapes and making port wine. And that's a very important movement going forward. There is another organization that is coming down the pipe that I mentioned earlier about the Torres family and the Jackson family, two multinational some two confidence coming together to bring a few good wineries together and hopefully support, you know, lowering their greenhouse gas emissions by up to 80% by 2040. So the conversation is starting at major levels. It have to kind of have a trickle-down effect and get everyone involved. Again, hopefully we can all work within our own framework and our capabilities whether we're doing a little or a great deal to have an impact. But the organizations we'll see more of it and more clarity coming through the pipeline in the next 12 to 18 months.

**Greg Dalton:** Does seem to be less visible in these beverages than it is and say clothing or some

other electronics or other consumer products, even seafood that sort of thing, paper Forer Stewardship Council labels that sort of thing. Let's go to our next question. Welcome.

**Male Participant:** Hi. My name is Taylor I work in clean energy. So naturally I was wondering if you could talk a bit about the move for beverage companies to focus on energy emissions whether it's vineyards putting solar on their roofs to get the harvest or breweries going hundred percent clean energy.

**Greg Dalton:** Dan Petroski, I'll put you on the spot. When we talked on the phone because of the power outages and fires recently, there's been a lot of dirty diesel backup generators being purchased and the Chronicle has written about this. So tell us about the energy input.

**Dan Petroski:** I think there's this balance in life you can have a diesel energy backup source like a generator to control all the good things you do. Whether it be, you know, solar power or organic farming or Bay Area green business and all of the certifications that we have that have anointed us as one of the leaders in sustainability and energy efficiency. But we still have a business to run in order to do that and to employ people and to move forward and hopefully have a healthy crop and bring our product forward. We have to purchase a generator and we did this past year and we bought one of the cleanest, most efficient generators we could find on the market and we're happy to have that. This is the third year in a row where power was lost during the harvest season and it's one of our toughest times of the year to go down and power. So we were out for four days and we had that backup generator running the winery at that point.

**Greg Dalton:** Katie Wallace, Budweiser ran an advertisement during the Super Bowl with amber waves of grain and corn and it pulled back to windmills. And windmills were very much the center of that. I understand that clean energy is not really active among craft brewers because they're maybe in a mall somewhere and not directly source their energy. But can you speak to renewable energy at the larger companies, whether that's important to them and, you know, why is Budweiser doing that?

**Katie Wallace:** I think it's really wonderful like I said before that the larger companies are starting to season business value in this through a combination of their risk assessments and also now for affordability of renewables as that increases and also the state and federal level incentives. And there are also many craft breweries that are purchasing solar power or wind power. We have wind power that comes from Wyoming just up the road. We have biogas the results out of our process water treatment plant, we make electricity with it. We also have solar on-site and dozens of breweries that are moving in the same direction. I would say for the smaller companies though that probably one of our best opportunities to secure renewables would be getting our utilities and our municipalities to commit to hundred percent renewables. We lobbied our local government here to adopt hundred percent renewable electricity by 2030 and they voted that in last year in 2018 which is going to be the most efficient and effective way for us as a smaller to medium-sized company to secure our renewables.

**Greg Dalton:** You've been listening to a conversation about beer, wine and climate change, with Katie Wallace, director of social and environmental impact at New Belgium Brewing in Fort Collins, Colorado; Esther Mobley, wine critic at the San Francisco Chronicle; and Dan Petroski, a winemaker at Larkmead Vineyards in Napa Valley, California.

**Greg Dalton:** To hear more Climate One conversations, subscribe to our podcast at our website: [climateone.org](http://climateone.org), where you'll also find photos, video clips and more. Please help us get people to talk more about climate by giving us a review wherever you get your podcasts.

**Greg Dalton:** Kelli Pennington directs our audience engagement. Tyler Reed is our producer. Sara-Katherine Coxon is the strategy and content manager. The audio engineers are Mark Kirchner, Justin Norton, and Arnav Gupta. Devon Strolovitch edited the program. Dr. Gloria Duffy is CEO of The Commonwealth Club of California, where our program originates. [pause] I'm Greg Dalton.