

# UTOPIA WALKS AWAY

*Oral Histories of Infrastructure  
in Copenhagen, Denmark*



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in Copenhagen, Denmark*

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UTOPIA IS ON THE  
HORIZON.

I MOVE TWO STEPS  
CLOSER, IT MOVES TWO  
STEPS BACK.

## Introduction

Copenhagen, the capital of Denmark, has branded itself as a shining bright green city — grandma bikes to work, electricity is made from wind, and students get paid to go to school.

Is this a utopia?

A utopia for whom? For punks self-organizing cultural centers, rural farming communities, and cooperative owners of local grocery stores? Or for right wing parties selling public infrastructure to private investors?

Infrastructure is a complex network of fundamental systems and machines that are under us, over us, and around us. Often working as quietly as the concerted heartbeats of millions, a country's infrastructure shapes the way people live. Yet how often do we wonder if it could be different?

These oral histories were recorded between 2011 and 2015 at the local power plant, wastewater sewage treatment plant, train company headquarters, post office, self-organized cultural center, bike mechanic workshop, and at a handful of other facilities.

I learned there is a group of neighbors that own a biomass plant that heats their own houses. Another group of neighbors built an offshore wind farm. Mail is delivered by bicycle. A sewage treatment plant creates campaigns to *not be an asshole to your toilet*. A group of volunteers labor to make organic food affordable.

The facilities, processes, organizational structures, and fundamental approaches take on a different form in this nation of 5 million people and 400 islands. It's curious how in this glimpse into their daily lives we see the infrastructures that hold them together are by no means fixed — but instead, are a working, changing field.

The successes of Copenhagen's infrastructure are valuable learning opportunities. So are its shortcomings. The answers are as valuable as the questions not yet answered, and as the new questions that they inspire.

Eduardo Galeano wrote, *Utopia is on the horizon. I move two steps closer, it moves two steps back. I walk another ten steps and the horizon runs ten steps further away. As much as I may walk, I'll never reach it. So what's the point of utopia? The point is this: to keep walking.*

Though Copenhagen may be a city for biking, it is also a city for walking.



IF YOU THINK YOUR TOILET  
IS A GARBAGE BIN, YOU'RE  
A FUCKING BASTARD



*If you think your toilet is a garbage bin,  
you're a fucking bastard.*

### How is water cleaned?

Interview with Jens Kjær Christensen  
Information Officer at  
Damhusåen Wastewater Sewage Treatment Plant



K: What is the process you use to clean wastewater?

J: The process line of wastewater begins here, where we remove the biggest things with screens. After this, we remove sand and grease. The sand goes to the bottom and the grease stays on the surface. Next, we move the screened wastewater into the primary settling tanks. What goes to the bottom here? What we call sludge, consisting mostly of organic materials. This sludge will be pumped from settling tanks into digestion tanks. The anaerobic digester tank produces methane gas. This gas will be burned to make electricity and local heating.

After this, we have the sludge process. The sludge will go to a building where it's dewatered in a centrifuge. Then it is brought out to the other plant and incinerated. We are always trying to reuse the ashes. Today, about half the ashes are used for building insulation, called rockwool.

Next, the wastewater undergoes biological and chemical treatment. The wastewater comes up in these Bio-P tanks and is mixed with biological sludge. Biological sludge is what naturally settles to the bottom during this process, and it is rich with microorganisms. By mixing the biological sludge, we are adding microorganisms throughout all the wastewater. Next, we let this mixture out in great basins, running round



and round. Here we remove organic materials: nitrogen, and phosphorous. We add iron chloride in order to remove phosphorous. There are also phosphorus-removing bacteria that live in this system that help out. So you treat phosphorous both biologically and chemically.

There are standards for how much nitrogen and phosphorous can be in the cleaned wastewater let out to sea. Phosphorous is 1.5 mg/liter. Nitrogen is 8 mg/liter maximum.

K: How do those two things affect the environment?

J: Of course, if we did not remove phosphorous and nitrogen we would have problems with oxygen failures in the sea. These would start a vicious cycle and the sea will die. No oxygen, no fish, no plants, no swimming, boom. Do you know what the greatest challenge is to water in Denmark? Agriculture. Much of the nitrogen used as fertilizers, natural or artificial, goes out into the water and ends up in the sea. There are over 20 million pigs farmed in this country and their excrement is another source of water pollution.

In Denmark, half the sludge from municipal wastewater plants is reused in agriculture. There is a big discussion concerning this. Some say we have no evidence that it is bad for life's cycles. Another point of view is to stop bringing the sludge out because there might be unforeseen consequences.

K: What about the sludge incineration process? Does that put pollutants into the air?

J: In fact, we are building a new sludge oven just now. Our old ovens are from the 1980s. Now we are building a new oven which will premier on the first of May. This should be the most energy efficient sludge oven in the world. Of course, we have a complex process to clean the smoke going out of the chimney. There are very strict regulations on what can exit the chimney.

K: When you burn the sludge, do you gain energy or expend energy?

J: With our old systems it was necessary to use energy in order to burn. We used gasoline or biogas to get the water out of the sludge. This new oven shouldn't require any extra energy to

burn the sludge, it will even create a surplus of biogas.

K: How does your plant compare to other plants?

J: In 2006, the EU made an investigation. They looked at wastewater treatment plants in six or seven countries, including Latvia, Denmark, Holland, Spain, and France. Who was number one? Denmark. But at the same time, they criticized us, saying we had been using too much money in order to reach this level. Still, you can find many places in Europe where their plants are not efficient. It is still a developing field. In the last 15 years there has been a major effort to make wastewater systems more efficient.

K: Who owns the plant?

J: Normally in Denmark, it is the public who owns these wastewater plants. That means it is the citizens who own and pay for the process that is going on here. Altogether in this area, on average, people will pay 50 kroner [\$7] per cubic meter [264 gallons]. That means you are paying to have a cubic meter of drinking water brought to your house, made dirty, transported in the sewage system, and processed in the plant. Then you pay a green tax. Everything is included in this 50 kroner. The average household consumption of water is 110 liters [30 gallons] per person per day. Of course, people use additional water out of the home.

K: I think the average person in the US uses about 375 liters [100 gallons] of water per day in their home.

J: That's a lot. If you go 20 years back in Denmark, the average use was 189 liters [50 gallons] each day.

K: Why did water use go down?

J: There are several reasons. One is that water costs money. The more you use, the more you pay. The other reason is that there have been campaigns to use less pure drinking water, because there have been problems having enough.

In Denmark it is very easy to get to groundwater. All of the water we use as drinking water is groundwater, not water from the surface. Even if it is very easy in Denmark to get water,

much of this water cannot be used because it has been polluted by human activities. This includes fertilizers on agricultural fields, livestock farming, and dumps. Before, there were no controls on dumps. Therefore, today's demands are rather strict concerning water quality.

K: Could you talk about some of the challenges you face when cleaning the water?

J: One of the big problems we have today is climate change. This means sometimes we have such heavy rains that the wastewater system was not built to handle. This system pools wastewater from houses, factories, industries, institutions, and hospitals. All are mixed together down in the sewage system with the rainwater from roofs and streets. When we have such heavy rains, the sewage system and wastewater plant cannot contain these masses of water and wastewater. What will happen? Either we only clean the wastewater mechanically and not biologically, which means we will put not entirely cleaned wastewater out to sea. Or the water will stand in the houses, in the cellars, and in the streets. And this is a big problem.

In August 2010, it rained so much inside ten hours that the whole system broke. Normally, we have 560 millimeters of rain in a year. In this ten hour time span, 80-90 millimeters fell. You cannot imagine it. The cars were swimming round in the streets. It was summertime and the beaches were immediately polluted. You had to wait for days to swim, until the mixture had gone sufficiently out to sea. A lot of the houses were filled with water. We had a lot of work to prevent bacteria and other microorganisms from having too good a life down in the cellars.

K: Are there things you are doing to adapt to the heavy rains?

J: You have a lot of things you can do. We are working a lot with what is called intelligent wastewater treatment. Intelligent wastewater treatment tries to control and move the water in the sewage system from places where there is too much water to places where there is not so much water. Also we are using radar to forecast what the weather will be, so we can be prepared inside the plant.

In the big cities, the municipal governments are exploring how

to use rainwater as a positive element in urban design. They are filling pools with rainwater and surrounding them with green plants, where perhaps people can swim a little. They are integrating porous areas where the water can sink slowly down to the groundwater. They are growing green roofs where the plants drink some of the water and delay it before falling to the ground.

K: Would it be a big benefit to this plant if there were more done in the city of Copenhagen with green roofs and rainwater catchment?

J: Yes. You have to look at it as a whole, because the water is moving from one place to another. There has to be a correspondence between different branches of the public. What are we doing? Is it a good or bad idea? We also need to use fantasy and imagination, and to be patient with things that work slowly.

K: Could you talk more about your relationship with the public? I've never heard of wastewater sewage treatment plants doing public outreach campaigns like you do here in Denmark.

J: In the past, it was typical in society that people would not know anything about the wastewater plant. Today, we are much more active in relationship with citizens, especially youngsters. We are a much more open institution, rather than a closed, technical facility. It's normal that these kinds of institutions have to cooperate and discuss with the public, inspiring people to have better habits.

K: Could you talk about your most recent campaign?

J: Last year, we made a campaign with an interactive website. We had famous Danish pop musicians make a rap. You can hear the rap if you click on this animation on the website. You go into a bathroom, the stall doors open, and we have our dude saying, *If you think your toilet is a garbage bin, you're a fucking bastard.* Or something like that. The word *skideren* is hard to translate. It is playing on the word *shitting*.

This is the poster we made for the campaign: it is an illustration of the rapper sitting on a trash can like it is a toilet and saying that phrase. At the bottom of the poster, there is

a *No-Go List* – what you are not allowed to throw down the toilet. The things that should be put in the garbage can instead: cotton swabs, cotton pads, hair, cigarette butts, cans, condoms, sanitary napkins, tampons and pantyhose. If people are not told anything, they will do everything.

K: Why is it bad to put those types of things down the drain?

J: Those things can clog your pipes, the system in your apartment building, neighborhood, or the larger sewer system. Garbage can destroy the wastewater plant pumps. We started with these things because it is so easy to understand. If you start discussing chemicals, then it gets much more complicated.

K: Did you notice an impact after this campaign?

J: It's very difficult to say. We can say that many people have discovered this campaign, but nowadays everyone is bombarded with messages — buy this, buy that. You have to make campaigns all the time to get through.

During the three week campaign period, the rap song was played on radio stations. We had images on buses, metros, and S-trains. We also succeeded in getting on television programs. The idea was to get people to go to the website. Our goal was to have 5,000 young people go there. It ended up with 20,000.

K: Could you talk about your upcoming campaigns concerning chemicals in water?

J: In Scandinavia we have what we call *the swan*. It's an environmental certification symbol. It says these products have been tested for many things: allergenic perfumes, chemicals bad for the sea, and a recyclable bottle. There is another symbol called *the flower*, which is European. We are making advertisements for these two symbols. Today you will find these symbols more and more. That is in correspondence with people's increased awareness that shampoo is not only shampoo. It can be many things.

K: How do products with the swan and the flower impact the water sewage treatment plant, versus products that don't have the symbols?

J: Some of the people working here in the plant get in contact with the wastewater and therefore with what it contains, bad chemicals. That's one thing. Another thing is heavy metals. If the sludge ashes have too many heavy metals in them, it is difficult to reuse them. Next, we do not clean water to drinking water quality. So, some of the chemicals will float through the system and out into sea. It is very difficult to make an account of all these different chemicals. What will the mixture become? The consequences? If you consider, for instance, the byproducts of medicines or liquids like petrol, those things are very bad for the aquatic environment.

Then we have concerns for consumers. In order to preserve a shampoo, they can add something which can change the hormones in your body and affect your ability to have children. There are also a lot of perfumes in products which can change your skin and give you terrible diseases. We are bombarded with chemicals in the food we eat, the air we breath, and when we wash ourselves or powder ourselves with nice smells. We bombard ourselves with more and more chemicals. Therefore it is essential that people have the possibility to choose. We cannot force them.

Think back to the time when milk in Denmark was just milk. Then it started up with økologisk milk. In the beginning people said, *organic milk*? It was a little more expensive and blah blah blah. Today they sell more organic milk than normal milk. The same has happened with potatoes, vegetables, fruit and so on. After a very slow start, the movement has exploded. The same is happening with the environmental symbols of the swan and flower. But, it is also tricky because some companies will try to present themselves as green even if they are not.

K: So more people are using more ecological cleaning products?

J: These are not ecological. Definitely not. These products come from industries and are made with different kinds of chemicals. They cannot be regarded as ecological. Even if you have the swan or the flower you can not use a lot, because it will still harm you.

Many things in nature are poisonous. If I go in my garden I will find at least 8 or 10 plants that if I put them into my mouth

Økologisk is the Danish word for organic.

or rub them on my skin something bad can happen. Nature, the natural nature is poisonous. So, when you use the words *organic* or *ecological*, people think it is something healthy. You don't regard nature as it is in fact. You shall not make tea out of anything you see out there, even though it's natural.

But still, *Økologi* in Denmark has been a success, for sure. It's good to have the option for when people say, *What shall I do?* We can say, *Look for the swan and flower.*



YOU HAVE TO REGROW THE  
FOREST – OR ELSE IT IS  
JUST THE SAME BUSINESS



*You have to regrow the forest –  
or else it is just the same business.*

## How is energy generated? [Combined Heat and Power]

Interview with Christian Laursen  
Environmental Manager at  
Amagerværket Power Plant

Amager is an island on which the southwest portion of Copenhagen is situated. Værket is the Danish word for power plant.

C: We are at Amagerværket Power Plant, a part of Vattenfall Thermal Power. There are 110 people working here and we produce heat and electricity for 50,000 to 100,000 homes. I think that all the workers who live in Amager bike to work. That's about 30 or 40 people.

K: What do you see as the future for power in Denmark?

C: Coal will not be an option for the future. In ten or fifteen years, I think you won't see any coal-fired power plants in Denmark. We will only have a future burning biomass.

K: Although coal isn't a low-carbon source of fuel, one of the main reasons I am interested in the coal plant here is because the way you operate is less harmful to the environment than the coal plants in the United States. Your plant still emits CO<sub>2</sub>, sulfur, and nitrogen dioxide, but it emits less than plants in the US. I also read on your website that you are working with district heating, and multi-fuel capacity, like burning biomass, and using a heat accumulator . . . I don't even know what that is.

C: A heat accumulator: that's like a thermal can for coffee, but for water.

K: You also have DeNO<sub>x</sub> and Desulfurization systems, and combined heat and power, right?

C: Yes, that's a huge part of our business. Maybe I can start by setting the frame and explain what each of those system are later.

Construction of this plant started in the 1970s. The two units from that era are both closed now, but two other units have been built since.

Unit 1 was commissioned in 2009. It generates 80 megawatts [MW] electricity and 250 megajoules [MJ] of heat per second. It can run on coal, oil, or biomass, but now it only runs on biomass. We use oil to start it up. We don't burn any coal in it.

Unit 3 was built in 1989. It generates 215 MW electricity and 330 MJ heat. We use oil to start it up and then it runs on coal.

On the grounds of this plant, we also have storages of biomass, coal, and oil. At the back of our plant, that borders the sea, we store our waste products, like fly ashes, coal bottom ashes, and biomass bottom ashes.

K: Could you talk about the processes you use to generate electricity and heat?

C: We burn coal, biomass and oil. First, we mill coal and biomass into dust. Then it is burned in the incinerator. The flue gas goes upwards and produces steam. The steam is run through a turbine, which generates electricity. The condensation from the steam can either be used for district heating or cooled into the sea. In the summer, there is not enough use of heat in Copenhagen and so we cool it into the sea.

After producing the steam, the flue gas runs through the DeNO<sub>x</sub> catalyts to remove the nitrogen oxides. To turn the harmful nitrogen oxides (NO and NO<sub>2</sub>) into water and nitrogen, you add water-based ammonium (NH<sub>3</sub>). This causes a chemical reaction where the oxygen in the nitrous oxides bonds with the hydrogen in the ammonium, leaving you with water and nitrogen.

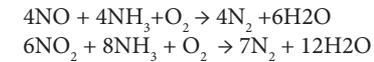
DeNO<sub>x</sub> is a process that removes nitrogen oxides from the emissions. Desulfurization is a process that removes sulfur dioxide from the emissions. Acid rain is caused by emissions of nitrogen oxides and sulfur dioxide.

A megawatt [MW] is a unit for measuring power. 1 MW is equal to 1,000,000 watts, or 1,000 kilowatts [kW].

A megajoule [MJ] is a unit for measuring heat and energy. 1 MJ equal to 1,000,000 joules, or 3.6 kW hours.

Amagerværket has the capacity to provide power to nearly half of Copenhagen and 30 percent of Copenhagen's district heating system. Copenhagen's population is 583,348. [2015 statistic]

Gypsum is a soft sulfate mineral composed of calcium sulfate dihydrate. It can be used as a fertilizer and is the main ingredient in blackboard chalk and many forms of plaster.



After DeNO<sub>x</sub>, the flue gas runs through the electrostatic dust filter and goes through desulfurization, where we wash smoke with calcium carbonate. That makes sulfur into a gypsum structure. After desulfurization, finally we emit the flue gas.

K: How much energy does it take to run the plant?

C: The whole process takes 3 MW of energy. 10% of the coal the plant burns is used to run the plant.

K: So, burning coal and biomass makes steam which you use for two purposes: generating electricity and heat. The heat is then transported to buildings through the district heating system. Is all of Copenhagen heated with district heating?

C: Yes. All the big cities in Denmark have district heating. Many small communities have district heating, but not all of them.

K: How much more efficient is district heating than for each home or apartment building to have their own boiler for making heat?

C: District heating doesn't make burning coal more efficient. The big efficiency comes from the fact that when you produce electricity you also produce heat. If you don't have district heating, 60% of the energy just gets cooled into the sea. With district heating, this energy is used for heating buildings. So rather than wasting that energy, it's used for heating.

K: How does the heat go to people's houses?

C: There's pipes in the ground. Hot water runs out and cold water runs back. We use the same water all the time, running round.

K: Is the district heating in Copenhagen all hot water heating?

C: We have both hot water and steam heating. Some areas of Copenhagen were originally built for steam heating. Some areas are built for water heating. All new systems are built in

water. In time, we will also convert the Copenhagen steam system into water.

K: When it's summer and you don't need the heat, you pump the heat into the sea. How does cooling water into the sea affect the ecosystem? In the US, since most power plants aren't connected to district heating, they need to cool the heat all year round.

C: The highest level the coal plant can rise the narrow strip of sea surrounding Copenhagen is ten degrees Celsius. But we can only do that if the electricity prices are high enough. If the prices drop below a certain level then we will stop the plant. That is a business decision, because we are taxed on the heat released into the sea, as well as our CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions.

Copenhagen is unique because there are many plants that deliver through the district heating net. See that plant with the two chimneys out there on the horizon? We are competing with them to deliver to the Copenhagen net. In the summer, they are too far away from the center of Copenhagen. So they will be pushed out because it costs energy to pump heat into Copenhagen. In the summer, we are the winners.

K: Is it hard to turn the plant off and turn it back on?

C: Oh yes. If we start from a cold kill, it takes about 20 hours to get on the net. But if it is hot, it will take 2 or 3 hours. But we won't do it every day.

K: Can you describe how the energy net functions in Scandinavia and what your plant's relationship is to it?

C: Here, we are part of a big market connected to other parts of Denmark, Sweden, Germany, and Norway. That makes the net quite stable. So even if there is higher use in Denmark for a short period of time, you just borrow energy. We operate on an hourly basis. We sell some on long contracts and some on the spot market. We are also paid for regulation. For instance, if there is a sudden rise in the use, then we can regulate up. If there is a sudden lower use, then we can deregulate. In the summer, that service is sometimes more valuable than the price of electricity. Our role goes from being the base of

Regulation is a system used by the Danish government to control how much is produced at one time and what type of energy is being produced.

Since this interview was conducted, Vattenfall sold Amagerværket to HOFOR energy utility.

electricity production to being a regulation apparatus.

Regulation is pretty complicated. Different sources of energy are regulated more easily than others.

Hydroelectricity is easily regulated because they can just shut it off. Coal is a little more difficult to regulate because it has a power curve, we can drop 15 MW in a very short time and jump 30 MW in 10 seconds. Nuclear energy is very hard to regulate. Nuclear reactors take a lot of time to go up and down. It's the bottom of the market.

In Denmark we have up to 30 percent wind energy in the net. That calls for a lot of regulation. It just goes as the wind blows and can cause a lot of spikes in power. When the wind is blowing and the windmills are making a lot of electricity, the price of regulation rises and the price of electricity falls. If we have a lot of wind energy we can actually have negative electricity prices. So you have to pay to deliver to the market. That is of course to try to control the market by saying if you are producing now you will have to pay. Then plants will stop very quickly.

As a whole, we can say that the coal industry is a declining industry. There is too much electricity in Europe. And the windmills are pricing the coal plants off the market. Only coal plants located in an area where they can sell their heat can survive as it is now. The prognosis says to reach the same level in electricity prices we had in 2008, it will be 2015 or 2020.

K: Why do they think electricity prices are going to rise then?

C: Because society will develop. We will get more electric cars and the need for electricity will rise. But a lot of energy-heavy industries stopped in 2010 and they are not coming back. They are being re-established in China and other countries where the cost for labor is low.

K: Is Vattenfall investing in wind?

C: They are investing a lot in wind. Actually, they put us up for sale. We are not a core market. So coal in Denmark, and some power plants in England, are put up for sale. They are investing heavily in wind power and wind turbines. We have a lot of big

wind farms in Denmark on the sea and more are being built. The Danish government has just initiated a new policy that states that we should be independent of fossil fuels by 2050 and reduce CO<sub>2</sub> emissions 20% by 2020. But under this policy, the emissions from cars are not reduced. So all the reduction has to come from the energy industry.

In the United States you don't have a price on CO<sub>2</sub>. But in Europe we do. At the moment, one ton of CO<sub>2</sub> costs 100 kroner. But that price will rise through the years.

K: What do you think the price of CO<sub>2</sub> will rise to?

C: It is very difficult to say. I think the CO<sub>2</sub> price will rise slowly, but the energy price, because of shortages in the world, will rise quickly. The rising oil price and natural gas price may put an end to CO<sub>2</sub> prices. At some point, you just have to have energy, no matter what it costs, financially or climatically. High energy prices may make low CO<sub>2</sub> prices so insignificant they become irrelevant. But also the water is rising because of climate change. All of this makes a very complex dynamic.

K: What is the difference between the way CO<sub>2</sub> is controlled versus how NO<sub>x</sub> and sulfur are controlled?

C: CO<sub>2</sub> is a different system than the system we have for NO<sub>x</sub> and sulfur. CO<sub>2</sub> is a market based system. NO<sub>x</sub> and sulfur are controlled with a local Danish tax. With NO<sub>x</sub> and sulfur, the plant will be stopped if it emits above an allowed level. As it is now it will always be good business for us to keep the levels of NO<sub>x</sub> and sulfur down.

The CO<sub>2</sub> quota system is from the Kyoto Protocol, which accounts for Europe, Japan, Russia and some other countries. It is a market in Europe. In the start, we had so many free quotas. Now, you can sell them to each other. Or you can help other countries reduce CO<sub>2</sub> and then you can have the CO<sub>2</sub> quota for yourself. There are many ways you can gain CO<sub>2</sub> quotas.

With CO<sub>2</sub> prices, we have had a lot of hot air. For instance, Russia has a huge amount of very low efficiency power plants which have shut down now. Since they aren't emitting all this CO<sub>2</sub> from these inefficient, poorly built plants anymore, they can sell it. There were also a lot of free quotas delivered to the

big industries. It is very difficult to know where it ends. In the beginning one ton of CO<sub>2</sub> cost 400 kroner and then it went down to zero and now it costs 100 kroner.

K: What are your plant's plans for the future?

C: Max Bio. That's our plan for the next nine years. Unit One will use 410,000 tons of biomass every year. 25% of that will be straw pellets and the rest will be wood pellets. The straw pellets will also have some other kinds of biomass waste mixed into them.

We are in the process of rebuilding Unit 2 to use biofuels and therefore becoming CO<sub>2</sub> neutral. In 5 or 6 years, we will probably burn 100% biomass. But if you use a lot of biofuels, you have to regrow the forest, or else it is just the same business. If you are burning wood and regrowing the forest, then its neutral.

If you put it on a fast stretch, coal is also biomass, but it has a recirculation of half a million years. Wood is about 30-50 years recirculation. Straw pellets are recirculated every year. We get the straw from the fields and the next year the same amount of straw is grown again.

K: Have you found that straw or the wood burns more efficiently?

C: There is a little more energy in wood than in straw.

K: Are you getting the straw and wood from Denmark?

C: The straw comes from Denmark, but the wood comes from Baltic countries, Canada, Portugal and maybe from Africa. In Canada everything is regrown. They had a disease in the trees there and a lot of the wood pellets come from those dead trees. I don't know if there is very much regrown in Baltic states.

K: Right now are there any regulations on this plant to make sure that all the timber is regrown?

C: Currently, there's not any regulations on regrowing biomass. It will be some time before it is perfect.

K: What happens with the physical waste from burning coal and biomass?

C: We have a goal of reusing 95% of our waste products: fly ashes and gypsum.

K: How do you reuse it?

C: Gypsum is used in the house building industry. They make plates for walls. If the fly ashes have below 4% coal residual they go to the concrete industry. If the fly ashes have above 4% coal residual, they go to the cement industry. The bottom ashes of coal are used for creating cinder blocks. The bottom ashes of biomass are spread on fields or in forests. The fly ashes from biomass go to Norway to a big deposit plant called Lange Oil, where they manage acidic waste products. They mix our ashes, which are very basic, with acidic products and create an aerosol product.



WE WERE NOT JUST  
EXPORTING WIND TURBINES

WE WERE  
EXPORTING MODELS



*We were not just exporting wind turbines.  
We were exporting models.*

### How is energy generated? [Wind]

Interview with Stefan Naef, member of  
Middelgrunden Wind Farm Cooperative

S: My name is Stefan Naef and I work with energy and the environment. The major part of my efforts have been in the development of the offshore wind farm at Middelgrunden, outside the harbor of Copenhagen. It has had its 10 year anniversary, but there is still a lot of work to do.

K: What is the history of Middelgrunden Wind Farm Cooperative?

S: The Middelgrunden Wind Farm was built in the year 2000, after only 5 years of preparation. At the time, it was the biggest offshore wind farm in the world and by far the biggest wind power cooperative.

K: What was the inspiration for Middlegrunden?

S: The inspiration was part of a strong development of the wind turbine industry in Denmark. We had a fast growth in rural Denmark, in the West and South, but in Copenhagen wind turbines were a virtually unknown technology. Back then, we had 15% wind power in our electricity grid. We wanted to educate people and provide them with the opportunity to have an impact on how their electricity is produced.

Another objective was to show that the time was right to

move on with wind power development. We had seen a strong development of wind turbine farms on land in Denmark, and in the United States and Spain, but at that time there had only been small pilot projects of offshore wind in Denmark, Sweden, and the Netherlands. There was still ongoing research, discussions, conferences, and papers, but we wanted to cut the crap and say, *Let's move on*. Reality shows that the time was right.

K: What were some challenges you experienced?

S: The challenge of Middelgrunden was putting up wind turbines in Copenhagen. You have to be modest in your expectations because the money for wind is modest and the availability of land sites for turbines is virtually nonexistent.

There had been some predecessors with small wind farms around Copenhagen. There had been one example at Advedøre. And one project near Middlegrunden, called Lynetten Wind Farm. I take part in that cooperative as well. In the case of Lynetten, we came to know that some dikes were built in the Øresund, the body of water surrounding Copenhagen, to create some dams for sludge and toxic waste. We made an agreement with the harbor and the sewage treatment utility that we were allowed to put the turbines on the dikes. But this was still quite a small project: 7 turbines, each with 600 kW power capacity.

It was different with Middelgrunden because it is offshore. In order to justify huge expenditures on grid connection and offshore work, which requires a lot of different inputs: new infrastructure, new vessels for deploying the foundations, etcetera, we needed to make it far bigger. The first suggestion was to make 27 turbines. We ended up installing 20 turbines, each with 2 MW power capacity. Middelgrunden Wind Power Cooperative owns 10 of them, DONG Energy Utility owns the other 10.

Even though we had some momentum from Lynetten and a lot of fine ambassadors in our members there, it was a huge task. We wanted to sell shares to ten times more members for a technology that was completely new. We wanted people who did not know about wind turbines to invest their money. That was quite complicated.

On average, Lynetten's turbines generate 4,000,000 kW hours [kWh] per year, roughly. This is enough power for 2,500 people. The turbines have a combined rated power of 4.2 MW.

On average Middelgrunden's turbines produce 44,000,000 kWh per year. This is enough power for 25,000 people, or 4% of Copenhagen. The turbines have a combined rated power of 20MW.

People in Denmark use 1,568 kWh per year, on average, according to the Danish Energy Agency.

Located on the west coast, Jutland is the largest landmass in Denmark. It is a peninsula that forms the continental portion of Denmark and the northern portion of Germany. Jutland also has the largest onshore wind resources in Denmark and has therefore seen the most wind development.

There was one quite remarkable thing: we were actually willing to develop this project offshore, the world's first commercial offshore wind turbine project, for a lower cost than wind turbines on land. In today's industry, everybody knows that the cost of developing an offshore project is at least double, maybe three times as much. The cost of service and repair is higher. It takes more time and more insurance. It takes boats. It takes so much more to keep these turbines running.

K: How many members did you have to find?

S: We had to sell 42,000 shares, and at one point, we had almost 9,000 members. Some only have one share, some have ten. Most of our members are individual citizens, but we do have a trade union and some small companies that have maybe a 100 shares each. On average, people hold the number of shares equaling their electricity consumption.

K: What did you sell the shares for?

S: 4,250 Danish kroner [\$6,330], which was far more than you would pay in Jutland. One share equals the production of about 1,000 kW hour a year. Some years you have more wind, some you have less. The cost is for the anticipated production. Just as in the case of Lynetten, we were quite conservative. We had some different wind turbine manufacturers make estimates for the amount of wind in a year; we took the most negative one and withdrew 10%. I think that is a very sound thing to do. I think it makes it more difficult to sell but it makes it more fun afterwards. At both Lynetten and Middelgrunden we have only had happy members.

The payment for the shares made it possible to buy everything upfront. Actually, it is a part of our bylaws that we are not allowed to put the cooperative in any kind of debt. So everything was paid upfront. Twice a year the members have money paid back from the sale of the electricity.

K: So, for one share members put in 4,250 kroner and how much did they get back each year?

S: For each share you get about 300 kroner [\$45] per year. In the beginning the return was quite fair because we did not have many costs for service and the electricity price was higher

back then. Today, it is more modest. The electricity prices have diminished and the costs of operation have grown. But still you get about 300 kroner back each year. It has never been a very profitable project but it has always been sound. Our investors have not been investing for the profit, but because they thought this was a promising and necessary project. They wanted to support it because they were curious.

K: Since Middelgrunden was constructed, have you tried to start any new cooperative wind farms? How has wind energy in Denmark evolved in general?

S: When Middlegrunden was connected, we thought, *Ok this is only the first commercial project. The next one will definitely be cheaper and easier.* But it seems to be more and more complex and challenging, and more and more expensive. In recent years, they have built some small offshore projects in Denmark and some huge ones. We now have four huge wind farms south and west of Denmark. A fifth big one is decided on. After many years without action, the Danish government has decided to build an even bigger farm in the northern part of Denmark. The only bidder for this was Dong, the huge national power company owned by the Danish state. They won this bid for a price of 1.50 kroner [23¢] per kilowatt hour, which compared to .60 kroner [9¢] – what Middelgrunden received – is quite a lot. The government said, *Ok, now we know that this is the price of wind power.* But this doesn't have to be the case. If the politicians want to get wind turbines out of sight, then we, the consumers, have to pay a premium price. Whereas, if we could put wind turbines on land we could produce power for as little as .25 or .35 kroner [4¢ or 5¢] per kilowatt hour. That is at least as low as one third of this high price for utility-scale offshore developments. So I think this is a very unwanted, unpopular development.

Many politicians think that wind power is very high tech and very complicated, *You better leave it to the utilities, to the big developers.* So wind development has taken a high stakes track, with highly specialized companies, consultants, and with everything on a big scale. But I think it would be better to chose a smaller, more decentralized track, where you could put clusters of turbines in local communities.

The utilities tend to have a problem finding areas where they

can deploy these projects because they are not very good at cooperating with local communities. Whereas it was much better in the case of Middelgrunden, since it was a locally based cooperative that took the initiative and that negotiates, cooperates, and has dialogues with all imaginable stakeholders.

In the case of Middelgrunden, it was very complicated. You had to deal with people who had no knowledge and no belief in wind power. But in the countryside, where you have people working in the wind turbine industry, they are connecting and running the turbines, and they own shares. There is a different attitude, a different culture. And you have cases where it is a bottom up initiative. Everybody has been asked to have their say. Everyone has been offered to participate, and to buy shares. This helps a lot. In some cases, wind cooperatives have even established a locally-based fund out of a small percentage of the profits. This fund invests in local cultural organizations, sports clubs, and culture houses. When this is the case, the acceptance is extremely high.

I think the way forward is to work within this framework and to enable municipalities and social housing companies to invest, and to change the game so wind turbine projects can be an integral part of the local economy, and more of the income from the power sales will stay in the community.

K: Can you talk about the history of the Danish energy policy?

S: Since the development of the Danish energy policy in the early 70s, there was a remarkable continuity for many years. It was what you would call a cooperative approach. All the political parties were taking part, as well as trade unions, energy utilities, and even some oil companies like Maersk, also known as AP Møller, the biggest company in Denmark. They were leading the development of the oil fields in the North Sea and also participating in wind power development. So there was this tradition of consensus. As a result of these long-term, cooperative systems, it was negotiated that the utilities should take on the effort of developing some offshore wind farms.

Remember these utilities are not commercial companies, they are owned by all the people of Denmark, either owned publicly by the municipalities, like in Copenhagen, or by a collective of small organizations. Over the last 100 years, small

electricity companies have grown and merged and become quite complex. The framework for them was that they were not allowed to make a profit. There was a nonprofit principle. If they earned too much in a period they lowered the future electricity price. But they were allowed to build up a pool of money for some investment programs, such as these offshore wind farms. We all had paid our share and we needed a long term framework in order to develop this offshore industry. All the players involved needed to have faith that this would not be a one time event, and that there was political will to pursue this track. In order to uphold this faith, 10 years ago it was agreed the utilities should develop a new wind farm every year or every second year, so we could continue to develop this complex industry.

K: Why don't you think this agreement was kept?

S: Because we had a new government.

K: You think it had that big an impact?

S: Definitely. They really hated this. They were actually ridiculing experts. They wanted to create a regime of experts with all the right answers. These experts who were telling people what to do and not to do and right and wrong. A year or two after they came to power, we saw a liberalization, a deregulation of the energy market. We were told it could be done so much more efficiently, we could save so much more money. But many people claimed this would not be the case because now you would need to make a profit and it would only become more expensive. And so it turned out to be that way. And they have, I would say, vandalized our industry.

Denmark had a very strong position when it came to education, business, cooperation, the sharing of information, energy policy, environmental issues, and development aid to foreign countries. In some of these areas the government has severely cut back. But still the government claims, *Oh we are so good at these things. We have done so much to keep up this development and everything that happens is because of our brave initiatives.* But this is not the case.

They decided to cancel these offshore projects. It would have been acceptable if they had just said, *Ok, we have looked into*

*this matter and we calculated and thought about it, and we have decided we will wait. We will postpone this project. We will see how the development will be.* But the Minister of Energy sent a press release stating that, *We are extremely concerned about the socio-economic effects of these offshore wind farms. We don't have faith in this. We cannot afford this. It's unsound.* Then the Energy Minister cited some background data which was really faulty. It was false.

You can see the past world market capital gain for wind turbines. It had increased by two digit growth for more than a decade. Then, suddenly it dropped. People have come to us at Middelgrunden, almost crying, asking, *What is going on in Denmark? Why are you doing this? We cannot convince our politicians that this is right when Denmark doesn't believe in it anymore.* Back then, Denmark still had a market share of at least 70%, maybe 80% of the world market for wind turbines. That's dropped suddenly. It's diminished to about 25% percent.

Now we only have two turbine manufacturers left, and one of them is owned by a German company, Siemens. Back then, everything was produced in Denmark. I think that was very interesting, very encouraging. That even though we exported about 90% of the production, everything was produced more or less in Denmark. It was a very important industry. One of our biggest export articles. Then the government thought, *Ok. They had their time, they had their support. Now they have to be able to stand on their own feet. We've done enough. We don't have to put up any more turbines.* But they had too simple of an approach to this, because we were not just exporting wind turbines. We were exporting models – ways of planning, developing, and investigating, ways of integrating huge amounts of wind power into the electricity grid. We were on the edge of this offshore era. It was very promising, and then they just swept it off the table.

We used to have minority governments. Minority governments have to negotiate all the time. They have to talk with all the other parties in the opposition in order to gain a majority for laws and initiatives. But this current government has blocked this situation. The Liberals make up the government, and then they are always supported by the most right-wing party, Dansk Folkeparti. They have been the most influential party in Denmark for many years. I would deeply respect if people

Denmark's Liberal Party, Venstre, is a right wing political party.

in Denmark wanted to have a more liberal regime, another distribution of the national budget. If people really want things to be different it is ok. But if they lie about what they do, if they simply destroy things, I cannot . . . I think it is very sad. This is not about policy. This is about energy.

K: But listening to what you've said, it seems that policy and energy are inextricably linked. What do you think will happen in the upcoming elections?

S: I think we will have a change. I hope we go back to what we were used to, back to a cooperating parliament. I don't want the left. Some people talk about the right and the left: the blue bloc and the red bloc. I don't like this talk about blocs, because when you have a bloc it's not a democracy. It is a tyranny of the majority. That's what it has been like for the last 10 years and I want this to change. I don't want a left bloc coming into power. I want these politicians to discuss, to debate, to negotiate, to make compromises, and to make long-term agreements that won't change around the next corner.

K: And what's next for you?

S: That's the next question. What are we going to do for a living in the years to come in Denmark? That's a big concern these days. We still have this capacity that grew this industry and these research institutions and cooperatives. I think we should deal with development of wind and wave power, new technologies, innovative, promising technologies.

As I said, it was not just a thing, it's not just a wind turbine. It is more about the context, how you integrate it with other technologies, how you manage loads and production. We are very interested in Denmark in how to integrate. We want to have a much higher share of wind power in the Danish system. Even the current government, they stated this some years back. We want to be 100% fossil free. What? It took some years before they said something about how, and especially about when. But now they have launched more initiatives stating that we will need to have much more offshore wind power in the system. This means we will have to integrate all our energy consumption. We will have to integrate the electricity production and the transportation system and the heating system.

This will make up a quite complex structure, but it will also make it much more stable. We will not be so dependent on imports and exports. The tools, the technology, and the know-how — we can develop these to make it happen. I think this would be very much needed all over the world.



FEASIBLE FOR A  
LOCAL COMMUNITY



*A project that is unfeasible for a big company can be feasible for a local community.*

### How is energy generated? [Biomass, District Heating]

Interview with Søren Stensgaard  
Daily Manager of the Samsø Energy Academy

S: We are standing in the district heating plant of Brundby-Ballen. It is a cooperatively owned district heating plant. There are 250 homes connected. The homeowners collectively own the facility. Right now we are standing in the fuel tank, this large barn for storing straw. The district heating plant fires 1,200 tons of straw each year to heat up all the homes and provide them with hot water. The straw is grown by local farmers. The heating plant itself is automated. We have to cut down on manual labor because salaries are expensive. We are paid really high salaries in Denmark. This plant is visited one or two times a day by a caretaker to check everything.

The feeding system for the boiler is a conveyor belt. The conveyor belt starts if there is a demand from the boiler. The demand from the boiler is triggered by the demand of the consumers. The system shreds oversized bales of straw. The shredded straw is then blown into a pipe in the boiler room where it is sucked into a big incinerator. The incinerator provides heat for water pipes. The water is heated to 80°C and distributed through a network of pipes into individual homes throughout two villages. The individual homes have heat exchange systems, where the hot water delivers the heat to a local circuit of water and then the cooler water is returned to the plant. When the water is returned to the plant it is approximately 40°C.

K: So to build this plant did you also have to build pipes under the ground?

S: Yes, we had to dig a lot of pipes.

K: How big a barrier was that?

S: You have to always balance the cost with the returns. What made this happen is the consumers, who are also the owners. They were promised two things. First, that this would be cheaper than an individual oil stove and you can save 20-30% on your energy bill. The second convincing promise was that this would be more convenient than when you had to call the oil person to fill up the tank when it was nearing empty, or if you forgot it during Christmas time and you were sitting cold in the house. Convenience and economy. If you can get those two things then anything goes.

K: Could you talk about the Energy Academy here on Samsø and the initiative to make the island powered by renewable energy?

S: The Energy Academy is located on Samsø Island, in the center of Denmark. The Samsø project is a unique project, at least in a Danish context. Samsø won a competition in 1997 to become the Danish Renewable Energy Island. We had 10 years to prove that it was possible to become 100% self-reliant on our renewable energy. In 2002, we concluded that we were successful. We reduced our carbon emissions by 140% over a ten year period. Today, each person on Samsø expels negative 2 tons of carbon dioxide per year. The renewable energy production facilities built on the island are all financed by local money and owned by the local inhabitants. So it is a locally owned and driven project.

The concept for the Renewable Energy Island project was that you are only allowed to use available technologies. No new fancy stuff that people cannot understand. It is more about using what we have. We have plenty of technologies available to actually make a difference. It's just picking up the phone and calling the local craftspeople to install them.

Here at the Samsø Energy Academy, we educate local craftsmen about these technologies. We also invite local

craftsmen to seminars here to talk about these technologies, like new types of solar panels, and small household wind turbines, why they are interesting and what is their payoff. When they know this, local craftsmen get better business and homeowners don't have to pay so much for heating and electricity.

K: How much participation do you have in these seminars?

S: More or less all of the local craftsmen attend, because if they don't know how to install these things, a lot of the job opportunities will go to the ones that do. But competition usually isn't an issue here. This is such a small community that every craftsman knows each other and they have a good sense of cooperation.

K: Could you talk about a few different types of renewable energy going on here?

S: It is quite simple, actually. When the project started, the resources that were available on the island were mapped on the master plan. It became apparent that we had to rely on wind energy for electricity consumption and biomass for room heating and hot water. In the process of ten years, three district heating plants were built to burn biomass and supply the homes on the island with hot water and room heating. Eleven onshore wind turbines were built to produce electricity. The last remaining item on the energy budget, transportation, wasn't tackled successfully. That is mainly because the technology was not available at the time. Electric cars are not easy to come by now, and they were less easy to come by in 2000 when the decisions were being made. We had to compensate for that and we built 11 offshore wind turbines to provide the energy that we use in the transportation sector. Almost all cars on Samsø are running on gasoline and diesel, but the amount of energy that we produce with renewable energy is more than we use in the transportation sector, including the ferries. It is kind of cheating, but that was a design choice we had to make.

K: Could you talk more about biomass, how you are using it and where it is coming from?

S: There are two sources of biomass on Samsø that we are

burning right now. In two of our district heating plants we burn straw that is a waste product from growing wheat and cereals here on the island, mainly for feedstock. The last biomass source they burn is wood chips. We have a small amount of forestry on Samsø and the waste from forestry is wood chips from cuttings and small branches. That is used to fire the last district heating plant in Nordby.

When we burn biomass it affects the carbon balance, or the balance of nutrients. We are taking a lot of carbon away from the ecosystem and burning it, and not all the carbon is put back into the soil. So there will be a soil degradation over time. Even though the ashes from the plant are returned to the fields, there is still a loss in nutrients.

It is easy for a small island community like Samsø to locally source biomass to supply our own energy. But if you look at urbanized areas with high energy consumption per square meter, there is not enough biomass there. You have to import it. You have to look at different aspects when you are importing biomass. Does it suppress food? Does it take a lot of energy to harvest the biomass and transport it to the big incinerators? All the aspects need to be measured to prove that it is sustainable. In Denmark, a lot of the big power companies are looking towards biomass to reduce our carbon emissions. But there is not enough biomass in Denmark to heat the entire country, unless we say we are going to produce energy on our fields instead of food. The big Danish energy company DONG is, in my opinion, doing the wrong thing looking to import wood pellets from Estonia and Canada. If there becomes a high price on wood pellets,

I am almost certain it will impact the biodiversity in Canada and in Estonia. It's far away from the Danish consumer, so we don't see it.

On the island, we are using approximately 40% of the readily available biomass. We would like to expand to use biomass that we are not using, which includes manure from cows and pigs, household waste, and vegetable waste from farming. When you combine these sources, it is possible to produce somewhere near 140 terajoules. That is enough to propel our two ferries with the biogas and still have some left to run some of the tractors and local goods transported on the island. We are now in the pilot phase of that project. We have mapped the resource

and are discussing ownership models at the moment.

K: Could you go more in depth about your process for mapping resources and developing ownership models?

S: We map resources by asking the groups working in these respective fields. For instance, we ask the municipality, *How much household waste are you collecting?* We ask the farmer's association, *How is your crop rotation looking on the island? How much cabbage waste is collected each year? How much onion waste?* Then we just add up the figures. We know from central databases how much livestock we have so we can estimate the amount of manure. When we get all the figures together, we ask some clever engineers living on the main island, *How much gas does that translate into?*

Regarding the ownership models, if possible, the owners must live on the island. If you own part of an installation, then you have access to the decisions in running it and sharing the profits, which go out in the local community. Even though you don't choose to play an active part, you don't feel annoyed by it. So the acceptance of these plants will grow. Of course, the biggest investors and owners will probably be the farmers and maybe also the ferry company. It is all being discussed right now. The financial investment is in the region of 30-40 million Danish kroner [\$4.5 - \$5.5 million]. If the plant is maintained properly, then it will probably last for 50-100 years.

K: How do you envision the biogas plant working? Will there be a special garbage truck that drives around and picks up the waste?

S: That is one model, to have the biogas plant responsible for collecting the biogas input. Another model is the producers driving it themselves to the plant.

K: Have you looked into any possible negative impacts of having a biogas plant?

S: Biogas technology is a fairly mature technology in Denmark. It affects the landscape, in that you can see it. There could be some smell for the neighbors. There will be 8-10 lorries driving by everyday. Then there is a small risk of polluting groundwater. All things need to be taken into consideration

when you decide on the site where you locate this. The way we do it here is we will take the discussion in the open arena where the most critical neighbors can voice their skepticism. We have to deal with that in a sincere way.

K: What other sorts of future plans are you working on?

S: We are starting up with Samsø 2.0: The Fossil Free Island. The idea is to convert Samsø into an example for how to transform a community to be totally independent from fossil fuels. How do we do that? What we didn't manage to address during our first stage was transportation. To address transportation in this second phase, we will have to drive a lot of electric cars and use biomass for some of our transportation needs. Another thing we didn't succeed terribly well at in the first phase was energy savings. Saving energy is the first thing you should do, but it is also probably the hardest thing to do because you are meddling in people's everyday lives. During the first phase, our goal was to cut down 2-3%, but we didn't succeed in that and just kept it steady over a ten year period. Those figures were also partially helped because the population of Samsø is going down. Like everywhere else, our energy need per capita is rising. We are buying new flat screen televisions and new computers, so our energy use is rising. Also our homes on Samsø are not exceptionally well insulated. We are using a lot of energy that we don't need to use. We are going to address that in several ways. We will promote energy efficient technologies that are already available. For instance, if you can exchange your circulation pumps in your home its payback time is between 2-5 years.

K: Can you talk more about circulation pumps?

S: If you have a water-transmitted heating system, like a boiler, you heat up water and transport it with radiators, then you have a circulation pump in the boiler room that moves the water stream around the building. The old fashioned pumps, meaning 5 years or older, typically have two frequencies and are running 24 hours per day all year round at around 40 watts. The new pumps have a frequency measurer that measures the demand, so they only run intermittently and only use 3 to 8 watts. The Danish company Grundfos makes marvelous pumps. Changing your pumps will save a little energy, but it is an example of an easy thing you can do.

The thing that will save a lot of energy is insulating your home, putting more insulation in your roof and in your walls. That is the most efficient way to do it. In Denmark, when times are good people want to improve their homes, the first thing they want is a new kitchen and bathroom. What we like to say to people is that if you insulate a room first, and wait a year to make the kitchen, your saved energy can actually pay for a lot of the expenditures for the kitchen. People know this, but they fail to act on it.

K: What material do you recommend people insulate with?

S: Anything really, as long as they insulate. The material we used here at the Samsø Energy Academy is paper wool. A benefit from this is that it is a recycled material. The energy used to make it is 100 times less than that from rock wool, which uses a lot of energy to make because it is molten rock and glass.

K: Could you talk about the background of the people that are on Samsø?

S: Samsø is a rural farming community. The income per capita is way below the Danish average. The education quality here is also below the average Danish population. So we are not rich people and we are not particularly clever.

The foundation of this energy project was made to include people, not exclude people. Since a lot of people feel included that is probably why the awareness is a little bit higher. But it is not perfect at all. We had a lot of students from America here the other day and they like to point out that we are very good with energy, but how is the recycling going? We don't recycle. We have a landfill in the southern part of the island. It is not a piece of pride. It is an issue we definitely need to tackle if we want to be a totally sustainable island. We were also eating avocado for lunch here, where does that come from?

K: So is your approach to take certain steps towards sustainability?

We would like our farmers to change to organic farming, but when we go out as "energy experts," and say to our farmers they should change to organic farming because it is more

sustainable, they say, *Shut up. You know about energy, we know about farming. Just let us mind our business.*

Usually when we are talking about building new infrastructure projects in Denmark, and it's probably the same around the globe, we have the NIMBY effect. We all recognize that it is necessary to have facilities to provide us with power: nuclear, coal or wind turbines. What we don't like is having it close and having it spoiling our view. That was the case on Samsø, also. Nobody wanted the wind turbines, except the farmers. 30-40 farmers all wanted wind turbines because it was good business with a fixed feed-in tariff. The resistance usually comes from the neighbors, the nature conservationists, and the people. Why should we look at big wind turbines if we don't get anything out of it?

The way it was done on Samsø was to make sure it was actually possible to own parts of these wind turbines. Today more than 400 people own shares in the land turbines and 384 people own shares in the offshore turbines. Now when people are looking at the wind turbines, they are actually making money from them and they have a say in how the turbines are run. The land turbines were paid off in 6-7 years.

Land turbines are more efficient if you look at the amount of money you need to invest in them. You don't have to build offshore foundations and offshore cabling. The offshore turbines have a longer payback period because it is much more expensive to install offshore wind turbines, but they do produce more energy. Because turbines produce noise, offshore turbines also have less of an impact on humans. In Denmark, the regulation is that land turbines must be located at least three times as far away as the height of the turbines, and that is usually enough to reduce the noise to next to nothing. In Samsø, the people who are living closest to the turbines are also the people owning the most shares, so they accept a little inconvenience because they are also earning a profit.

K: Could you talk about the economics of renewable energy?

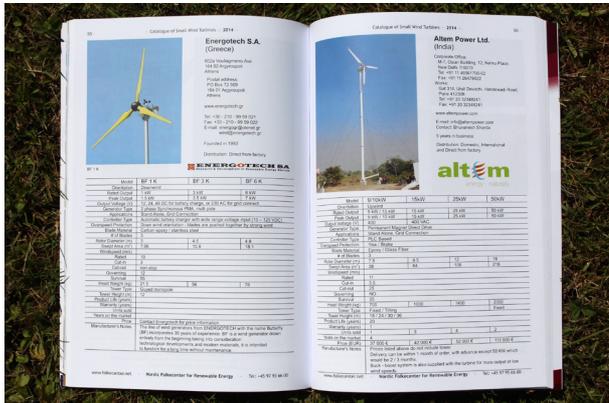
S: The economics can be looked at from different points of view. On a larger scale, if you are a big company you always have to look at payback times and interest that will be paid back to shareholders. If you are looking at it from a local

NIMBY is an acronym for the phrase Not In My Back Yard. It is used to characterize residents opposed to a new development located close to them. Often such residents believe that the developments are needed in society but they should be located elsewhere.

level, the everyday person, as long as they are going to break even, is willing to invest in renewable energy. So a project that is unfeasible for a big company, can be feasible for a local community.



WE HAVE TO CHANGE  
THE MODEL



*We have to change the model.*

**How is energy generated?  
[Small Scale]**

Interview with Jane Krause, Director of the Nordic Folkecenter for Renewable Energy

J: The question is: How could Denmark, such a little country with so little wind, be the world leader for wind?

K: Denmark doesn't have much wind?

J: Some, but not so much. Look at Argentina, look at Egypt, look at parts of Canada, Sweden, the northern part of Norway.

K: What was the background?

J: One event that caused Denmark to move towards renewable energy was the energy crisis back in 1972-1974. For Denmark it was a shock. We were one of the countries that were most dependent on oil. When there is enough oil, then it can be difficult to come up with new ideas. When you have a shock, it can be easier to come up with new ideas. Because we were in crisis, the Danish society was quite open. We began coming up with ideas of creating small independent systems, setting up solar heating systems, solar electricity, and wind turbines.

**The Chernobyl disaster was a catastrophic nuclear accident that occurred on 26 April 1986 at the Chernobyl Nuclear Power Plant in Ukraine.**

In 1985, one year before the Chernobyl disaster, the national parliament decided that we would not go with nuclear energy; we would go with renewable energy. The decision was led by a coalition of women, working together across different parties in parliament. They said, *When we work with renewable energy it can be decentralized. In each house there can be a solar*

*heating system and solar cells. In each farm there can be biogas installation. In each community we can have a wind turbine.*

The idea of using wind turbines became very popular because people were familiar with windmill technology. Since the 1800s and into the 1920s, when we didn't have electricity in the whole country, many farmers used windmills to make flour. They would have a windmill on the roof, and when the wind blew, a belt would rotate and grind the flour. This gave us an idea of how modern wind turbines could be used. During WWII, we showed that wind turbines could deliver electricity and services for people in their households.

It was the small and middle scale enterprises, and especially the blacksmiths, that set up modern small scale wind turbines. They were successful, strong, and delivered well. By the end of the 70s and beginning of the 80s, there were around 25 different companies in Denmark that produced wind turbines. In the mid 80s, there was a merger and then for many years there were 7 companies that produced wind turbines. Today there are only two companies located in Denmark that produce wind turbines: Vestas and Siemens. Siemens is a German company, but they bought a Danish wind energy company and they still have the factory in Denmark. Both Vestas and Siemens produce large scale wind turbines. There aren't any small scale wind turbine manufacturers in Denmark anymore. The last one was bought in 2003.

K: I heard that small scale wind turbines are being removed from the landscape and large scale ones are being erected in their place.

J: We are all asking ourselves this question: How can such a decision be taken that we should replace the small windmills and set up big ones? How could this happen in a country like Denmark? It was politics. The national parliament decided that we want to have few big wind turbines and not many small ones.

Now, if you want to put up a large wind turbine, you have to take down small wind turbines. If you want to put up a 2 MW wind turbine, then you have to remove 1 MW of small wind turbines in Denmark. For example, you find ten 100 kW of wind turbines running in different places in Denmark, buy

1 megawatt [MW]  
= 1,000 kilowatts  
[kW] = 1,000,000  
watts [W].

them from the farmers, take them down, and then you can erect your 2 MW wind turbine. The large turbines are not required to be put up in the same place as the small turbines.

K: Could you give a specific example of how small turbines are removed from the landscape?

J: At the bridge just south of town, there used to be forty 100 kW wind turbines set up on either side. In 2000, there was an investor who wanted to erect three 1 MW wind turbines, so he bought all the smaller turbines by the bridge. They went in with machinery and sawed down all the small wind turbines. They just cut them like trees. Every machine was damaged, the tower, the blades, everything. I took pictures and went to the national parliament in Copenhagen and said, *I want to show you what happened. These wind turbines, that are very good turbines, they were all destroyed. These could have been taken down and gone to Lithuania, to Russia, to Latin America and run there for many years. I think this should be stopped immediately.* So now that has stopped. Now people have to unscrew the turbines, take off the blade, and take them down piece by piece. Because of this decision, there have been new businesses that deconstruct wind turbines, renovate them, and sell them second hand. The used wind turbines are sold to Ireland, Italy, the Baltic countries, and Russia.

When we lobby, we lobby that we should not take down old wind turbines to be able to set up new ones. We also lobby for a new ownership model, because these large turbines are usually owned by investors and not by communities.

K: Could you give a little more context on the politics that went into making the decision to remove small-scale wind turbines?

J: In the early 1990s, there were many wind power cooperatives forming. In many rural areas, people began to think, *Over on the neighbor's land there is always such good wind*, and then they would go to their neighbors and say, *Do you think we could rent a piece of your land to put the wind turbine on, because whenever we come over there is always so much wind in your field?* Then the farmer would say, *Yes, that is a very good idea. It's only a very little place that's needed for the turbine and we only need a little road for the service auto to come, so that's no problem.* In this democratic way, in many places throughout

Denmark people formed cooperatives. This was what we called “people’s planning.” Neighbors got together to set up a turbine and would divide up the shares. Each share would be for 1,000 kW hours. A family would say, *Oh, we use 5,000 kW hours per year, so we would like to buy five shares of the wind turbine.*

If a 200 kW wind turbine was set up in an area here, like in Thisted, it can produce 470,000 kW per year. So we could make 470 shares and end up with around 50 families that owned one wind turbine. All the electricity goes to the national grid, then there is net metering, and the families would receive money for the number of shares they owned.

This people’s planning, it was not organized at all. Some people would just get an idea and then go with it. Then the national government said, *No, that’s not the way.* People in industry and some environmentalists started to say, *It would be nice if we could reduce all these small wind turbines and replace them with bigger wind turbines. Then there are less wind turbines in the landscape and it is more energy efficient.* And the industry said, *That’s a very good idea.*

At the same time, we have had a very bad political situation in Denmark since 2002. The new parliament here closed everything regarding renewable energy. In 2001 there was an election, and for the first time in more than 80 years, some of the minority parties grew larger than the rest. So they could make a bloc politic. On the 1st of April 2002 they said, *No more money for renewable energy.* And they canceled all programs. A lot of our engineers moved away, a lot of them went to the UK and Germany. In the year 2005, our prime minister said, *We have made a wrong decision, we need renewable energy.* Then they made a big funding for renewable energy, but not for small companies. The Energy Development Demonstration Project is too bureaucratic for small and middle scale companies to get money out of it. But the big companies can hire consultants that can apply for the funding. So small and middle scale companies, which are 98% of all companies in Denmark, cannot get the financial support.

K: Could you talk about Denmark’s history with centralized energy and decentralized energy?

J: Before 1985, if you look at a map of Denmark there were centralized power stations. After 1985, there were small

The Thisted region is located in the northwest portion of Denmark’s Jutland peninsula. It is one of the windiest areas in Denmark. The Nordic Folkecenter for Renewable Energy is based in Thisted.

Kommune is the Danish word for municipality.

Copenhagen, Aarhus, Odense, and Aalborg are the largest cities in Denmark.

scale windmills and solar heating scattered throughout the landscape – full of decentralized energy supply. Then there were discussions, *We don’t need to have coal here, they sail it from South Africa, they send it from Poland. When we generate energy centrally, then we often have to use water for cooling. We can set up a little village energy system based on biogas. We can set up a wind turbine.* People who ran the big power stations were losing the power in Denmark because we said we don’t need it, we can do it locally. So there was a lot of lobbying against decentralization. Then the people coming from the power companies said if the Danish people want wind energy, then we need to make sure that we set up wind turbines that are owned by some of the people coming from the power plants. Then the planning started.

K: So there was a switch from people’s planning to government-organized planning?

J: Now here comes this interesting thing: Even though the national Danish government said 1,800 MW of wind turbines need to be erected on land by 2020, the municipalities have to do the planning. Many municipalities planned as such: The municipality would look at the land of Farmer A, Farmer B, C, D, E. If they selected Farmer B’s land to put the wind turbines on, then Farmer C said, *Why not here?* And A said, *What is going on?* B said, *Thank you so much.* The others in the community said, *What is happening here?* B now has the right, so he now sets up one wind turbine for himself and his family, then he sells the ground to investors. The investors install three 2 MW wind turbines. With such planning the social system was out of function. B sells ground for maybe 1 million Danish kroner. He has done nothing, he has just sat in his chair and then the kommune made him a millionaire. In reality, there is not much difference in wind in these farmers’ fields. The investors come from Copenhagen or Aarhus or Odense, and put wind turbines here, and all the local people look upon it and get no benefit at all. Farmer B gets very rich and if something was not so good for Farmer D, then B bought D’s land. The social dimension is very important because electricity is for common good. The local municipality did not include in the planning process that the wind turbines should be owned without profit, that it should be common good. Around 2000 - 2005, the protests started because people were seeing what happened. People saw that B got a new house, new

car, and bought all the other farms. B no longer had colleagues. He was alone. The people said, *We will not have wind turbines any longer. No. They kill birds, they're noisy, they don't look nice, the blades fall off and damage our children. It is very dangerous. The animals get sick when they live next to a wind turbine.* Here in Thisted, out of 40 wind turbines in seven locations, there were only 12 owners. And the community owned nothing.

K: So, one of the arguments was about the ownership?

J: Yes, but you see, arguments about the ownership don't count when you protest. It counts if it kills birds or makes noise; there is more and more of this soft way of talking.

In Hvide Sande, a town just south of here, there was an investor that wanted to set up three wind turbines in 2009. All the citizens said, *No.* Then in 2009, they came up with a plan. *We should set up three wind turbines that are owned by all the people that live here. People who live 4.5 km around the wind turbines get 20% and 80% of the ownership should go in a fund for common good for the whole municipality.* It is called an erhvervsdrivende fund, similar to the idea of "new green jobs". All in Hvide Sande said yes. In December 2011, they set up three 3 MW wind turbines. The towns of Henne Strand and Hirtshals also set up the same fund. The wind turbine is becoming the technology that raises new money locally. Wind turbines as tools for green development in rural areas.

Here in Thisted, no new windmills have been put up since 2007 because of protests. We need a new model. We don't need the investors – there is enough money to start off and borrow the rest from the banks. We could use some project management. A 1 MW wind turbine on land costs 10 million Danish kroner for the foundation, for the wind turbine, and to be connected to the grid. A 1 MW turbine will earn 12 million Danish kroner over 20 years [\$2 million].

By 2020, we have to set up 1800 MW if we are to reach our goal of having 50% of our electricity come from renewable sources. Because of the protests, we have only set up 400 MW. In the next 5 years we have to set up 1400 MW. If we do not find a model where people say yes, then it will not happen. Years ago, people took the decision to make trains run throughout the rural areas. They were welcomed, these trains

that were noisy, ran in the night, and marked up the landscape, but people welcomed the trains because it was infrastructure that we all could use. The same must happen with the wind turbines: that people welcome the turbines, they organize, and they have ownership in a local fund for common good.

K: Would investors be interested in the erhvervsdrivende fund?

J: Not at all. They will lobby against it and we will lobby for it.

K: Are there still large scale wind farms going up?

J: Very few. Now there is a new small scale development, what we call household wind turbines. The wind turbine delivers energy to your house. You use what you need for electricity and heating, then you sell the rest of the electricity on the grid. We are starting with 20 kW wind turbines, the same size we were using in the 70s. In Denmark it is possible for people living in the rural areas to live based off of renewable energy. We are testing household wind turbines here at Folkecenter.

K: Could you talk about the renewable energy testing you do?

J: Here at Folkecenter, we have testing stations for small scale wave energy, solar energy, and small scale wind energy. Our wave energy test station is out in the fjord. It's the second stage of a testing program we have with Aalborg University, which includes a first test station in an indoor basin and a third test station in the rough waters of the North Sea.

We test solar panels from 20 different companies on the rooftops of Folkecenter. They are hooked up to a measurement system on our website. This way, people can use our measurements as a guide to how well different panels perform and which ones would make the most sense for them to install.

We test wind turbines in a field at the entrance of Folkecenter. This area of Denmark in the Thisted municipality is the most windy area in the north of Europe, so it is a very good place for testing. For the last two years we have been testing on household wind turbines designed by different companies around the world. Household windmills in Denmark are maximum 25 meters to the end of the blade and maximum 25 kW generator. They are designed to last for 20-30 years. It is

interesting because it is new small and middle scale companies that are developing the technology. These new companies are the ones getting the good gear boxes, generators, blades, towers, doing all the drawings and calculations, and setting it together. They come to our test station and make the foundation and set up their household wind turbine. It has to stay here for one year. Each turbine has to get up to 20 meters per second for over six hours and they have to show that they can stop the wind turbine as a safety precaution. Over one year, we measure if their turbine produces relative to their power curve calculations. In the end they get a certification saying that it was tested under these conditions. We produce a guide that explains how these different turbines performed. People can use this guide to decide which turbine to purchase.

K: What is the viability of renewable technologies like household wind, small scale solar, and wave power? And what is their impact on nature?

J: Wave energy technology is not commercial still. When we started with the wave energy twenty years ago, we said in ten years it will be commercial. But that's not true. We still say 10 years. We know how much energy there is in the waves, but how to take it off, that's a big issue.

Up in Norway, and over in Japan, they have different wave energy technologies that are functioning, but it is all put on cliffs. The waves come to the cliffs, the water falls through a hole, then it runs down, and then out again. But when we talk about wave energy that is out in the ocean, that's the most difficult.

K: Do you see any impacts on the sea?

J: No, not at all. There is a Danish company and a German university with some promising designs that do not use oil to lubricate the hydraulic systems; they have developed a water-based system.

K: And wind energy? Is it successful and what are its impacts?

J: Today in Denmark 40% of all our electricity consumption comes from wind energy. In 2020, we will go for 50%. In Denmark, we have around 5,000 wind turbines set up. 90% are

on land, and 10% are offshore.

About killing birds, there are more or less no problems. Normally, here in Denmark, with 5,000 wind turbines, we have maybe 8 or 9 birds total that fly into the blades. When we plan to install wind turbines, we avoid putting the turbines in areas where hunting birds are active. There have been problems on land up in the north part of Norway where there were a lot of big hunting birds and twenty windmills set up. When a big hunting bird is so focused on the mice and other animals on the ground, they sometimes do not focus on the wind turbines. So when they would go down very quickly to get the animals, then it could happen that they could run into the wind turbines.

One way wind turbines impact nature is you can see them. You have to put the wind turbines in a place where you can see them from a long distance. So they change your landscape.

K: Will renewable energy impact urban or rural areas more?

Renewable energy, the big new change, will be predominantly in the rural areas. For wind turbines, biogas, and biomass, it will be very much in the rural areas. A lot of social investment happens in the big cities. Look at Copenhagen, Aarhus, Odense. They build a new music house, new transportation, new opera, infrastructure for metro, and new universities. Here, really nothing happens with investment in society. People move to the cities. We get less and less jobs. In Hvide Sande, a lot of jobs. People move to Hvide Sande. The same will happen here when we do this erhvervsdrivende fund. A lot of families would like to live outside of the cities and live in a responsible society where we can take care of each other.

We have to change. The climate agenda, as we have put it, has to change. We have to phase out oil, coal, and natural gas. But it is very difficult for a democratic country when there is so much protest against renewable energy.



BICYCLING IS AN  
IDENTITY



*Bicycling is an identity.*

### How is bicycle transportation organized?

Interview with Peter Laustsen  
Bicycle mechanic at Metal Kassen



K: I've noticed when you cross a road, the traffic islands in the middle are spaced perfectly to fit a bike. I'm curious about how the bicycle is a unit of measurement in urban design.

P: All new bike lanes in Copenhagen are designed to be two Christiania bikes wide, so two Christiania bikes can pass each other in the bike lane. They are making the roads smaller for cars and bigger for bikes.

Copenhagen has an extensive system of bike lanes. The bike lanes are situated between where the cars drive and the sidewalks. The car road is lowest. It is in the center of the road. On either side of the car road, there are bike lanes. The bike lane is raised ten centimeters higher than the road. They build the bike lane higher because of safety. A car can feel a bump if they go over the curb into the bike lane. Then on the outside of the bike lanes is the sidewalk. The sidewalk is raised up another 10 centimeters.

K: I've also noticed there are all these little asphalt ramps connecting the bike lanes with the road and the sidewalk.

P: Most of the time these ramps are made for people in wheelchairs, parents pushing children in prams, and elderly people with walkers. They are also for rolling dumpsters down. Also, every time there is road work the city makes them as temporary things. They put a little asphalt down to



make the bike lane on the sidewalk while they are doing road construction. I think they often don't dig them up when they are done. These ramps make it easy to get in and out of the bike lane when you need to park your bike on the sidewalk, though they aren't necessarily built with that purpose in mind.

For the most part, everyone parks their bike on the sidewalk in Copenhagen. Generally, you can just park your bike anywhere on the sidewalk that's convenient and out of the way of pedestrians. Some places there are also special bike racks where you can lean your bike. You don't need to lock your bike up to a bike rack or a metal pole or anything. You can just lock the bike to itself and leave it standing on its kickstand. This makes parking your bike quite convenient.

K: Are there other ways that the city tries to make cycling more convenient?

P: The new idea is to build bike lanes to help people who live outside the city to bike into the city. Now they are building bicycle highways called super bike lanes to make it more comfortable to bike long distances into the city. They are also trying to make these green waves, where if you go 20 km per hour then you will not have to stop for a red light at all. In the old days, they made it for cars, but now they are making it for bikes. They are also designing bike lanes that avoid interacting with cars at all, so bikes don't have to stop and wait for cars to cross the road.

K: There's really an average speed that people bike at in Copenhagen. It's not particularly slow and it's not particularly fast. The lights are even timed to this speed. If you go to other cities, a lot of times people bike much faster. Do you know why this is?

P: I think in other places in the world, if you bike it is because you are a bike person, and of course, you bike faster if you are a bike person. Here everybody bikes. You don't bike because you like to bike. You bike so you can go to work and you don't want to get sweaty on the way to work. People bike because it's easier to bike than anything else.

K: Why do you think it is easier to bike here?

P: Because it's less pricey. You don't have to pay for the bus or the train. And it is a lot faster. It's faster than the bus or the train. And then you don't have to go to the gym that often.

K: I think you could make the argument that bicycling is the fastest mode of transportation in a lot of cities. Yet, bicycling is not the main mode of transportation there. In New York it is faster to bike, but people predominantly drive cars and take the subway. Here, it seems like bicycling just something people do. I'm wondering how the ethos developed here that bicycling is just the way you get around.

P: I think it started in the old days before everyone could afford a car. When you see pictures from the 30s and 40s, there's more bikes than there are now because nobody could afford a car. Then bicycling had a revival in the 70s when we had the oil crisis and we were not allowed to drive cars on Sundays because we had to save oil. Then bicycling fell a little backwards and people started driving more cars. About 15 years ago bicycling came back into fashion when it became modern.

Here, bicycling is an identity. If you live in Copenhagen, biking is part of being a modern person. It's a part of who you are and what you are. When you work in a bike store, a lot of people buy a bike not because of how it rides but because of how it looks. It's a lot about identity, like how you buy a pair of shoes. A lot of people think, *How will I look when I am on the bike?* It's like how people buy cars in the United States. It's a funny thing when people buy a bike and they only care about how it looks and not how it rides.

K: What do you think the City of Copenhagen has done to promote cycling?

P: It is a big identity for the city. They want it to be the bicycle city of the world. It is a brand. It is a good way to brand a city because it is easy and it is also in the whole green way of thinking. It is an easy way to communicate a brand to the outside world.

K: The branding of the city is pretty intense.

P: Yeah, they use a lot of money branding the city.

K: I don't know if I have experienced city branding anywhere as intensely as I have experienced it here. Being here, you realize that, *Oh, I thought Copenhagen would be a green city because the city has advertised themselves this way. I came here like everyone else, because I had heard it was a green city where everyone bikes.*

P: I went to Portland, Oregon once and there was this Copenhagen bicycle exhibition. The minister of traffic in Copenhagen was speaking on a video and there were a lot of Danish bikes around the room. So Copenhagen goes out and brands themselves in other countries.

K: Do you think it is just to get tourists to come, or do you think it is something more than that?

P: I think tourism is not that big of a thing in Denmark, money-wise. I think they are trying to attract companies. If you brand your city then people have an idea that it is a nice city, or country, to base their companies. We cannot compete on taxes and stuff like that because they are way higher here than everywhere else.

K: Copenhagen isn't trying to brand itself as a city that exports bicycles?

P: No, because we import every bicycle.

K: There aren't any bicycle manufacturers here?

P: Only some very small manufacturers. There is one in the inner city, where they make the frames themselves, but otherwise all of them are from Taiwan and places like that.

K: What about Christiania bikes?

P: They are put together at a factory in Bornholm, but the frames they get are imported. I think they are made in Czech Republic. In Bornholm, they build the boxes and it is a local craftsman who makes the cover.

K: Could you explain what the Christiania bike is?

P: The Christiania bike is a three-wheeled bike. There are two

wheels in the front and one wheel in the back. In between the two front wheels there is a box with an open top. You can carry things in the box. To turn you have to turn the whole box and the wheels turn. The Christiania bike is most used by families with kids. You can carry kids around in the box. It's really helpful when you have to have two shopping bags and two kids and everything in there. And your laptop bag or backpack from your job and stuff like that. A lot of preschools also use them, so they can drive around with four kids in the bike and go on tours and stuff like that.

In the beginning, the Christiania bike was built in Christiania. It's the same story as any other bike company in Denmark. Once they produced their own bikes, then it became too expensive and people didn't want to pay for it, then they would have to get it made in Taiwan or Poland or something where it is a lot cheaper to produce. A lot of the parts are also from Japan, like Shimano parts. In Denmark, they just put some parts together and sell them. They are partly assembled in Taiwan. In Denmark, all they do is put the front wheel on and turn the handle bar, and then you tighten every screw and stuff like that.

The only thing they do – not Christiania Bikes, but the other brands like Kildemoes and Winther, all the big Danish bike companies – is just pick colors and designs every year. Every year they come out with new bikes, but actually they are just new colors on the same bikes with a different name. Then they have these big shows where they show all the new bikes, but they're the same bikes, just new colors.

But the Christiania bike gets completely assembled in Bornholm. They only import the frame.

K: When was the Christiania bike invented?

P: In the early 1980s, a blacksmith in Christiania made the first Christiania bike as a birthday present for his wife. Christiania is a part of Copenhagen where you aren't allowed to drive cars. People living there had invented different kinds of trailers you could attach your bike to carry things around, but then he built this bike where you could just put your things in the bike. Then everybody else in Christiania also wanted that bike and so he built up the business. People saw it and wanted it and then it

became bigger and now they are shipping them all over the world.

And the bike hasn't changed much from its original design. That's a funny thing to notice, that it didn't change and it still works. It's amazing because everything else has had to change during this time. Even the city's streets are changing to accommodate the Christiania bike.

K: What about the Long John bike that you are fixing today?

P: The Long John is way older. I think it was first made around 1900. In the old days you would go down to the grocery store and pay a little fee and then this young boy would use a Long John bike to bring you all the groceries. They also used Short John bikes to deliver groceries.

A Long John is a long bike. It's built almost like a normal bike. There are two wheels, one small wheel in the front, one regular sized wheel in the back, and a cargo carrier in the middle. It's a big metal rack that's welded onto the frame. It's in front of the handle bars. Having the rack there means that the front wheel is extended about 1 meter [3.3 feet] from the handlebars.

K: What is a Short John?

P: That's a normal bike with a small front wheel. On top of the front wheel you have a small rack that is built so you can carry a lot of heavy stuff.

K: How much can you carry on your Long John?

P: It says 120 kilos [260 pounds] on the rack. Then there is also the person who is riding it. So the bike can carry about 210 kilos [460 pounds].

K: Do you find your Long John to be faster than the Christiania bike?

P: Yes, because the Long John is more like a normal bike where you can lean to the side when you are riding and need to turn. You can't do that with three wheels. In the Christiania bike, you have to be slow on the turns or you can tip over.

K: Do you carry your son around in the cargo rack of your Long John?

P: Yes. I just strap him into a car seat that I attach to the rack. My partner and I have four different bikes to carry around our son. We have a Long John, a Short John, a Christiania Bike, and a normal bike.

K: Which one does he like the most?

P: He likes the Long John and the Short John because he sits in the front. He is in the lead and can see everything. In the Christiania bike he can see out but he is in a box.

K: How safe do you feel getting your kid around on a bike?

P: I feel quite safe. When he is inside there, you have the whole metal frame around him. Because he is in the middle of the bike, you would have to bend the whole front half of the bike before anything reached him. So, I think it's quite safe. And also because most of the cars in Copenhagen are very careful of bicycles. When you drive a car in Copenhagen you have to be very aware of bikes because the bikes are so fast and they are always there. People on bikes just ride, and the car drivers know that.

K: So it's more that the cars are watching out for the bikes, and not bikes watching out for the cars.

P: Bicycling with your kid is just a normal thing to do. In other countries, you bike when you are a kid and then you stop. Here, it just never stops. In all of my life, it has always been this way. Everybody bikes to school. Not many people drive by car to take public transportation to school.

K: Do they educate you in school about bicycling?

P: In public schools, in first grade they have one week where you learn about the traffic and how to put your hand out when you have to turn and stuff like that.

K: Since you have been to Portland, Oregon and some other places in the USA, do you think it would be possible to have this kind of bicycling lifestyle or transportation style in cities

in the USA?

P: The thing about Denmark is that it is quite flat. In Holland it is also flat and its capital city, Amsterdam, is a really big bike city. I think that is one big reason. You have to change the infrastructure. You also have to change the whole mindset of people. If people haven't grown up with the idea that everyone bikes, I think it can take many years to change the mindset.

K: How do you think you would go about doing that?

P: Like what I would do? The main thing I would do is make it more safe and more comfortable to be on the bike. Then I think it slowly will come.

Here they also make it annoying to go by car. It is fucking annoying to drive because you cannot go anywhere. There are all these one-way streets. You have to stop all the time and turn around and take another street and stuff like that.

K: Why did they design the car transit like that?

P: Because they want the cars to stay out of the city. Because of the pollution they want people to take public transportation or bike. The idea is that they would like people who come from far away to stop like 15 kilometers [9 miles] out of Copenhagen where it is free to park and then take the train that goes like every ten minutes into the city.

K: Does it work?

P: No, I don't think so. Actually there's more cars every year in Copenhagen.

K: Could you talk about your education as a bike mechanic?

P: Bike mechanic education is like every other craft education, like for carpenters, painters, and car mechanics. It's the same amount of years and the same school, the technical school. It is quite a new education. It started in 1983. In Denmark, the big difference is that, if you are a carpenter you are a carpenter because you went to carpenter's school. You don't have to be an educated bike mechanic to be a bike mechanic. You can just do it. Like a chef, you don't have to be an educated chef to cook.

During bicycle mechanic education, you learn all the different systems. A lot of the education is also being in a bike store or in a bike workshop. Most of it is learning by doing.

The shops are different. I work in a bike shop in Christiania called the Christiania Blacksmith. We only sell and repair Christiania Bikes. Working there for the last 3.5 years I've learned all the stuff I didn't learn in school.

K: How many days a week do you work there?

P: 3 days.

K: And do you make enough to live off of?

P: Yeah, yeah. It's fine. I'm not rich.

K: What do you get paid as a bike mechanic?

P: It's quite low pay compared to other jobs. When you are an educated mechanic – that's also a reason to take the education because you get paid more – it's from 125 kroner per hour [\$18]. I earn 150 kroner per hour [\$22]. That's quite high for a bike mechanic. But if you are a carpenter you can easily get 200 kroner per hour [\$30] or something like that.

K: Could you also talk about the workshop you have here?

P: We're standing in front of a bike workshop I run with another friend. It's a 20 foot container, it's red, it has a window in the middle. It's just a small workshop where you have all the tools you need. It's actually more built up like a metal workshop than a bike workshop, and is called Metal Kassen. Of course since I work on bikes all the time, I also work on bikes here.

K: What about your involvement with the bike workshop at the Candy Factory?

P: That's another place. It's organized like a forening, kind of like a union where you can be a member. It costs 100 kroner each month, and then you have access to this huge workshop where there is everything you need to build with metal. Actually, it is a metal workshop turned into a bike workshop

Forening is a Danish legal structure for a membership organization. It is similar to an association, union, or cooperative.

because most of the people who came there wanted to build bikes. Most people go there to fix their own bikes, but they also go there to build funny bikes. They also have open workshops where you can come and fix your bike for free.

K: What about the bike wars?

P: The bike wars are during K-Town Festival, which is a punk rock hardcore festival at Ungdomshuset. On Sunday, they have this punk picnic where they have live music and bike wars where you build crazy bikes and run into each other with the bikes, destroying each other's bikes until only one bike is left driving around.

K: Can you describe some of the bikes you've helped build for that?

P: Most of the bikes I've built for that are tall bikes. That's a bike that's made out of two bikes stacked on top of each other. We make a jousting competition for people riding the tall bikes.

After the tall bike jousting, there is a monster bike war. In this category you have to make a bike with more than two wheels, and then it just has to last long. Often these bikes have strange turning systems or else it is impossible to drive them. And then we just weld crap on the bike. Find some steel and weld it on so it cannot get smashed. Every year someone makes a mutant bike with a shopping cart because you can get it for free and they're everywhere.



WE NEED TO FIND  
ANOTHER WAY



*We need to find another way.*

### How is the train system organized?

Interview with Sanne Thorbøll  
Chief Consultant for Strategy and Environment at  
DSB [Danish State Railway], Traffic Planning Dept.



K: Could you give an overview of what DSB is?

S: DSB is a train operator who delivers passenger trains in Copenhagen, and all over Denmark. And when I say, *all over Denmark*, I mean only the three largest islands. Denmark is around 400 islands, but we only have trains on the three biggest ones. In the Copenhagen area, we operate suburban, regional and city trains. We have about 300,000 passengers in the Copenhagen area. In inner Copenhagen, you can catch the train every two minutes. In the suburbs, you can get the train every 10 minutes, even throughout the late evening hours.

K: How long has there been train transportation in Denmark?

S: The first track was built in 1847. We used to carry passengers and cargo, but there have been a lot of changes in Denmark due to EU legislation to create more competition on the tracks. So now we only provide passenger train service. In the beginning, our trains were steam, then we moved to diesel. In the late 80s and the early 90s, there were plans to electrify more of the rail tracks, but then there was a political change. Denmark is one of the countries in Europe which has the least electrified tracks. About 53% of our passenger kilometers are powered by electric powered trains, and the other 47% is diesel. Why we stopped electrification was probably because it is quite expensive.



Instead, we began a program in DSB, started partly by the government, called Good Trains for All. The priority was for everyone to have easy access to the trains, than for instance, to have high speed. Denmark is a little country and hence we don't need high speed.

K: Is DSB publicly or privately owned?

S: We are what you call an independent public corporation. DSB is a government owned company. The government owns all the shares but we still have a board; this gives DSB a bit more freedom. If something we want to do requires a big investment we have to go to the government. For instance, we cannot decide to buy new trains. We have to have that approved by the government.

K: What are the different types of trains you have?

S: We have a lot: electric and diesel, local trains and long distance trains. We have had a bit of a scandal about the newest trains. We ordered them about 10 years ago and still have not received them all. They are built in Italy. We couldn't wait any more so we made a deal with the manufacturer to deliver them unfinished. Then DSB will finish them.

The second newest trains are our Suburban Trains (S-Train), which run from the center of Copenhagen out to the suburbs. They are electrified trains produced in Germany by a partnership between Alstom and Siemens.

Then there are the older trains, a pool of electric trains that drive between Denmark and Sweden, crossing the Øresund Bridge. We own some of these trains. It was a challenge because we have different electrical power systems in Sweden and Denmark. So the trains need to have two power systems. Those trains are built in Sweden. We no longer have a train manufacturer in Denmark.

K: What do you take into consideration when you are looking to buy a new train?

S: Low energy consumption is one of our main demands. Energy consumption does more than pollute, it also decreases the lifespan of the train. We conducted lifespan analyses and

found that 85% of the impact on the life cycle is from the energy used in the operating phase. Keeping down the weight is very important. This impacts which material should be used to build the train. We also want the producers to use recycled materials, and that the trains be recycled when they die. For the EC 4 Train, the number of recycled materials are zero. It wasn't possible to build the train with recycled materials and keep the weight down. But on the other hand, when we are finished using EC 4 Train, 78% of the train can be recycled. The challenge now, is that the manufacturers produce trains that are almost 100% recyclable, but manufacturers don't use that many recycled materials. So who is going to use the recycled materials?

K: Could you talk about your practice of energy efficient driving?

S: We are building specialized GPS systems for the trains. The GPS systems will show the drivers how to drive most energy efficiently to reach a station at a certain time. Braking and acceleration uses a lot of energy. The smoother you can drive the less energy you spend. The GPS helps with that.

K: What is DSB doing to address the consumption of energy for parked trains?

S: We are working on how to put parked trains in the right mode to use the least energy. For the diesel trains we are actually putting them on electrical power. They can't drive on electrical power when they are parked. This has the advantage of no noise and no smoke. This is especially important because train parking areas are close to the city.

K: What does the government do to support DSB?

S: Last year the government passed a Green Transport Plan. About 65% of the investments were in public transportation. That is a challenge because our infrastructure, including our signal systems, is more than 30 years old. For DSB to be more punctual, it is important to do something about the infrastructure. About half the delays in Denmark are because of the infrastructure. If DSB were more punctual, more people would ride the train. It is estimated if we have

a passenger growth of 3% each year until 2020, it will reduce one million tons of CO<sub>2</sub> in the next five years. To improve the infrastructure, it was decided to put a lot of money into changing the signal systems.

At DSB we want to encourage high public transport in Denmark, in many modes. Earlier, we saw the bicycle as a competitor. We now see it more as a partner, because often you use your bike to go to the train. You can take your bicycle on all trains in Denmark. It is free to take your bicycle on the S-Train. There are a lot more bikes than there used to be. The most you will pay to put your bike on a train in Denmark is 65 kroner [\$10].

K: What are some of DSB's future goals?

S: Our goal is to be without any carbon footprint by 2030. This is dependent on the government passing certain environmental regulations. Unfortunately, the government recently voted not to approve these regulations. So we need to find another way. We might have to go back to our goal of being CO<sub>2</sub> neutral by buying renewable energy and carbon offsets.

In our strategy for being without a carbon footprint, the electrical problem is easy because it is possible to have electricity with no carbon footprint by buying wind and solar energy. For a diesel train it is a challenge to eliminate the carbon footprint. We are looking into biofuels, but we do not want to use first generation biofuels because they are actually taking food from poor people. But the second and the third generation biofuels might be possible.



THE BICYCLE IS THE  
EASIEST WAY



*The bicycle is the easiest way.*

*How is mail delivered?*

Interview with Johnny Fjellander, Postmaster at  
Copenhagen Købmagergade Post Office

J: We have about 50 mail carriers here at this post office. Our mail carriers use bicycles to deliver the mail. It's because it is cheap, of course, and it's because it is nearly the only way that you can get ahead in traffic. The 50 mail carriers at this office deliver mail to about 20,000 private persons and 5,000 offices and shops.

K: Do you think that having a bicycle-transported postal service would work in American cities?

J: Yes, of course. The bicycle is the easiest way. I went to New York some years ago and I saw many, many cars driving with mail. They stopped all the time, they couldn't park, and they had to walk very long distances, and I thought, *Why don't they use bikes instead?* It's not difficult. Here we have a part of the road that is just for the bikes. I guess that would be a first step, to make room for the bikes. New York City is already doing that, somewhat.

K: Could we talk a little more about your bikes? Where are they made?

J: They are made in Denmark, on a little island called Bornholm.

K: How are these bikes tailored to deliver mail?

J: We have three kinds of bicycles for delivering mail. We have a bike with two wheels, an older version with three wheels and a box, and a new version with three wheels and a big box. You can have about 100 kilos of post in the big box. They are very strong. They have gears so they can get up hills. They have very effective brakes for the security of the driver. And you can adjust the bikes in many ways - the handlebar, the saddle, you can adjust everything so it fits just for you.

K: What about the kickstands? I see this bike has little wheels attached to the kickstand.

J: Oh yes, it is because when you deliver post, the regular kickstand is not very effective because the bike is too heavy and will fall down. Therefore, we have made a special kickstand. It has wheels, so you can walk with the bicycle, without having to push the kickstand down all the time.

K: What about the way the boxes are designed?

J: The boxes on the new bikes are ergonomic for your back, so you don't have to bend over all the time. That was the problem with the older bikes. These new ones you see, the bottom of the box can go up and down based on the weight. The more post you put in, the more the bottom lowers down. The more post you deliver, it goes up.

K: How long do the bikes last?

J: Oh they last for many years. That one over there is twenty-five years old. To keep them in good condition, we service them all the time. We have a mechanic who works on them every day. He is always walking around and oiling, and tightening screws.

K: How much do the bikes cost?

J: The new bikes cost about 25,000 Danish kroner [\$3,600]. This is the same amount that a mail carrier earns in a month. It is so much cheaper to have these bikes than cars, because there is no fuel. It is only a good lunch and then away you go.

K: How many hours a day does a mail carrier spend on a bicycle? How do you plan their routes?

J: A mail carrier is in the field every day for four or five hours with a bike. Typically they drive 5-6 kilometers [3-4 miles] a day. 1-2 kilometers to the first delivery, then around delivering the post, then back again. But because there are not so many letters anymore because of e-mail, the routes are getting bigger and bigger. The routes have to deliver to more people.

K: How does that impact the mail carrier?

J: Until now we have not had to fire anyone from the job, but it is beginning this year. We will be reducing the staff about 10-20% each year. In five to six years we will be about half the size.

K: Outside of Copenhagen, is the mail delivered by bicycle or by car?

J: In all cities we use bicycles. In all the suburbs and small rural towns we use bicycles. We only use some cars outside the city areas, in farming areas and such places where the distances are bigger between houses. But sometimes we still use some bicycles in the rural areas, even where there is a big distance between the houses.

K: Is there a certain kilometer distance or urban density where it makes sense to use the bike versus the car?

J: My best guess is about 10-15 kilometers [6-9 miles] is the longest route for a bike, then we will switch to cars. But it also depends on how many customers we have and if it is a hill or not.

K: Could you talk about the transportation history of the postal service?

J: In this post office, we started the postal service in 1780. The first mail carriers were walking through the streets shouting who the post was for. They didn't have very much post. In 1905, we started with the first bikes. We have continued with bikes the whole time. In total, the Danish postal service has a fleet of about 6,000 bicycles. Almost all mail carriers bike when they come to the job and when they go home. I guess they love biking.



## ACTING AS AN ENTITY



*You take responsibility for each other's emotions and try to act as an entity in some way.*

*How is housing organized?*

Interview with Tannie Nyboe  
Resident of På Toppen Housing Collective

T: My name is Tannie and I live in a collective called På Toppen, which at the moment houses nine adults and two kids. It's situated in the heart of Nørrebro in Copenhagen. I guess you can call it a political collective, both in the sense that people living here are politically active, and that politically, we try to act together.

K: Could you explain what it means to be living in a "housing collective"?

T: The place is a big apartment with eight different bedrooms, two bathrooms, a big kitchen with an eating area, and a large common room which we use for hanging out, meetings, watching films together, reading books. Most of the adults have their own room. Some people share rooms. I share a room with my son, who is one year and three months old. We have talked about having a more fluid room structure, or function rooms. But right now, we all have a bedroom and all share the common rooms.

We share all the common meals which are vegan, we have house meetings every second week, we pay rent together and we pay for food together, we pay for cleaning supplies, toilet paper, toothbrushes, and other small stuff together. Aside from that, we don't have a shared economy in the sense that people would pool of all of their earnings in the collective. Some

Function rooms are standard bedrooms converted into rooms with specific functions: a sewing room, library, a band practice room. Rather than having private bedrooms, each housemate sleeps in a function room at night, and then all housemates have access to the room during the day.

housing collectives do this.

K: What does it mean for you to live in a housing collective and not just in a house together?

T: You try to make it a common home for all of you. Your housemates are not just your neighbors, they are people you have chosen to have a life together with, as if they were your family. You take responsibility for each other's emotions and try to act as an entity in some way. By raising my son in a collective and not living in the more normative nuclear family, I am trying to give him the opportunity to have more adults in his life. Often, housing collectives are seen as a thing for young people, but I think it should be something we are able to do in all phases of our lives.

K: What are the ages of the people in your collective?

T: I'm the oldest housemate at 34. A lot of them are like 30, 29, 28. My son Sikker is only one year old, but of the adults, I think Margarita is the youngest. She just turned 25.

K: Do you see your son being ten years old or sixteen years old and still living in a collective?

T: I think for sure in some collective, but I don't know if it is this collective. I don't see us living just the two of us, or together with his dad only. I like having other people around me and I like sharing my everyday life with my friends. I want to have a larger extended family than just my biological family.

K: Could you talk about how you share food? What meals are collective and how is food collectivized?

T: People get up at different times in the morning so we don't organize breakfast together. Most people are out of the house for lunch, so it is basically only dinner that we eat together. That's organized so that everyone has a day each week where they cook. Some people prefer cooking together in pairs and some people just cook by themselves. We eat at a certain time in the evening after people return home from work or meetings. Then we all share in the cleaning up. When you go shopping the day you are cooking dinner, you are also responsible for buying food that the collective needs.

We have different tasks. Some people have cleaning tasks and some people have other tasks. There's two people who take the task of going dumpster diving at least once a week. So we also have free food. We don't buy any bread. We get all the bread from the dumpster at Meyer's Bakery. We are also a part of an organic cooperative, KBHFF, where we get organic vegetables from local farmers once a week. One person has the task of collecting these vegetables. Each month we pay 600 kroner [\$100] per person. Which I don't think is really enough. When I first moved in there weren't any food policies on buying organic and we changed that since some of us have it as a high priority. Now we mainly buy organic groceries and we try to buy local products. That has made stuff a bit more expensive, so I think at the moment we are paying a little too little.

K: Around 600 kroner per month for food is pretty inexpensive. It seems like the systems you've developed work pretty well.

T: In the start I was pretty skeptical of putting everything into systems. On the one hand, when you are a lot of people living together I think it is good to have some systems so everyone has a role, and you don't feel guilty that you aren't participating as much as you should. But on the other hand, I also think you can put too many schedules in the way of living and you forget to feel where each other are at. You can end up feeling like, *Ok, as long as I fulfill the tasks or the jobs I have, then I'm good.* I don't think that's how living together should work. I think it is always a balance of making it as easy as possible with all the practical stuff while still taking care of your relationships beyond the practical level. So, I was a bit skeptical about all these systems. The collective I lived in before this place was a bit more loosely structured and that was quite nice. But I think I am getting used to these structures now. I'm living with them.

K: Do you think both ways can work? Unstructured and structured?

T: Yes, it really depends on the people. I also know people who have no structures at all. Especially if you are fewer people and you have time enough to spend at home, I think it works fine without structures, and it can often give it a more communal feeling. But if it doesn't work it can create a lot of frustration. I think it just depends on the people.

K: What about other structures you have, like with cleaning or other jobs?

T: Right now, it's organized so that every once in awhile we have a house meeting to divide all of the tasks. So far, people say what jobs they would like and we've divided them up. If you get sick of a job you can swap it, otherwise you just keep the same job. I'm responsible for cleaning one of the bathrooms and I make vegan spreads. Other people clean the common areas. Other people do dumpster diving. On top of that you have to cook once a week.

K: Every time I talk to people about collective living, people say, *In collective living, people don't do their jobs and there are always dirty dishes*. Personally, I've also experienced some of that. Do you find those are issues in your housing collective?

T: No. It's pretty clean, I would say. We have a dishwashing machine. That makes quite a difference. We also decided that after every dinner we would clean the kitchen together. Whoever has the time and energy helps clean it. So the kitchen is cleaned up once a day. This means you always have a fresh start in the morning. I'm often home in the morning, so I'll clean pots that are left overnight.

K: Do the house meetings help people keep the workload balanced?

T: I think the house meetings have a big influence. Not so much in balancing the amount of work, but in helping people get a feeling of where everyone else is at. Maybe there is a person who isn't doing their jobs or is not very focused when they are home, and you kind of get a bit annoyed by them. But when we have the house meetings, we often start with a round of how everyone is doing. Sometimes that person will say, *Hey I've been really depressed because of this and this*, then maybe you get over being annoyed by them not doing the dishes. So I think having meetings where everyone gets a feel for each other means you don't really care as much about the amount of jobs being done. I think it is fine that some people do more and some people do less. These things change because we have different needs and different priorities. I think house meetings create a space in which you can get a feeling for each other that helps keep you from getting annoyed.

K: How are your house meetings structured?

T: In the first few months I lived here, the house meetings were focused on practical issues because we had a fungus problem that we had to talk a lot about because there were a lot of money issues involved and a lot of cleaning. Otherwise, it depends from meeting to meeting. Some meetings are really short. There's always some practical stuff to talk about. We decided now that each meeting we are going to make a point to talk about kids. We're trying to involve the people who don't have kids in the life of the kids. During the house meetings we discuss how everything is going with the kids and if there is something to be aware of.

K: How much do you end up paying in rent each month?

T: In reality, we pay 3,600 kroner [\$550]. First, we payed 4,000 [\$600] but then we get some money back in taxes at the end of the year because we bought the place. We're actually making a mortgage payment, not paying rent to a landlord. We have a collective mortgage.

In Denmark, it is very hard to get a mortgage in a bank when you are a collective. They don't like giving out money to alternative living. So it's not easy to get a mortgage for a group of people who are not a family. There's basically only one bank that does it. I don't know why the other banks don't do it.

K: How long will it be till you own the place?

T: 35 years. I mean, we don't need to own the place. It's fine that the bank owns it. If you want a steady place to live in Copenhagen, you often have to buy it. It's very hard to find a place to rent in Copenhagen, it's almost impossible.

The bank that we have is fine with accepting new people on the mortgage. So new people can move in and other people can move out, it is quite flexible. The bank has to, of course, accept them as new customers. But so far they've accepted everyone, even people without an income.

K: How do you find housing in general in Copenhagen? What is the state of housing in Copenhagen?

T: It's really expensive compared to the rest of the country and it is really hard to find somewhere to live. If you don't buy your place, it is almost impossible to find a place to rent. If you don't know anyone who can help you it is very hard to get into the renting market. It's not accessible if you don't have a lot of money. The municipal government is trying to make it easier to find rental places if you have a job or if you are someone that the municipality wants to keep in the city. Even if you want to buy a place it's hard to find something that you can actually pay for.

K: Is it easier to find a place in a housing collective?

T: There are many different housing collectives in Copenhagen. Especially in Nørrebro, there's quite a few people living in collectives who engage in radical left politics. So if you are in that network it is quite easy to find a place in a housing collective. But if you don't know anyone, I think it is really hard to find a place in a housing collective. Then you might find a non-political housing collective. For me, it was quite easy to find a place to live. But I also know young people who have tried to find a place in a collective and have really struggled.

K: How many political housing collectives do you think there are in Copenhagen?

T: I could probably think of 20 different collectives where I know people who do political work. But there's probably a lot of places I have no idea about.

K: What about housing collectives that aren't political? Are there a lot of those?

T: There are actually. There's a lot of students who make housing collectives. The students don't necessarily have a political analysis of living in a housing collective, but they do it because it is a nice way of living and it is often cheaper. There's always new student collectives popping up. There are different Facebook pages and websites where they organize.

K: Is it easy to start a housing collective in Copenhagen?

T: It's easy if you have a place, if you are somehow lucky enough to find a one. It's easy to find the people, at least.

K: Could you talk about how your housing collective is politically active?

T: Let's say you want to throw a big support party at a social center like Folkets Hus to earn money for a cause. It's easier to ask a whole collective to run the bar for the evening than to ask a bunch of individuals who haven't worked together and don't know each other. To be efficient or to be good at what you are doing, you need to build a lot of trust. Living with people collectively can be a great way of building trust. So if you are not in a political group, being in a housing collective is also a very good way of organizing.

We just had this situation where a lot of refugees came to the border of Denmark and Germany and just wanted to travel through Denmark to Sweden. The authorities didn't know how to handle it and tried to force the refugees to register in Denmark. The first couple of days, a lot of people drove the refugees from the border of Denmark and Germany to Sweden. Different housing collectives began organizing together to help the refugees get to Sweden, where it is more likely they will be granted asylum.

Very interestingly, people actually began organizing cars within the housing collectives. We were like, *Ok this collective has two cars, this collective has one car*. Rather quickly, we managed to be a group of many people organizing together in a coordinated fashion. This could of course have happened without people living together, but I think living together made it much faster. And easier because you had this trust, that, *Yea it is uncertain territory, but I feel more ok about it because I am going with someone I live with*. Or maybe you dragged someone from your collective in who normally would never do this on their own. It also helped that people share information. If one person from your collective knows something, it's easier for the whole collective to be involved, or to figure out where to go.

Because we had to act so fast, and because there wasn't any other structure of trust, working with housemates made it a safer way of acting. The bonds of trust were already there, we built them while living together and we could rely on them while acting together to help the refugees. I think there is unused potential in using housing collectives for political organizing.

Another way we are politically active is that there are many political meetings that not everyone can participate in, but if one person from the collective participates in them then we can all keep updated. It's also encouraging to participate in a demonstration if someone from your home is going and you can go together. If you want to be politically active but you don't have a lot of time, like if you have a full time job or you have a kid or something that makes it impossible to be a full-time activist, living in a housing collective is a good way to stay in the loop.

K: Could you talk about the political organizing you are involved with in addition to the housing collective?

T: For the past couple of years I have been involved with an organization called Bødebanken. It is an activist insurance. If you are a member and you get fined or have to pay for a court case for political activism, you get it paid by the organization. It is a low-maintenance organization structure that just keeps running. It has been running for four years now and we are four people that keep it running. Sometimes we make big support parties, but other than that we try not to put a lot of work into it.

K: How many members do you have in Bødebanken?

T: We have around 200 paying members. You have to pay a fee of 50 kroner [\$7.50] every month to be a member. The member fee goes to pay other member's fines. We hope to be bigger one day, but I think it is working pretty well so far.

K: Do you think Bødebanken encourages activists to take more risks?

T: The plan was to prevent police from discouraging people by giving them fines. There have been some time periods where the Danish police used fines as a tool of repression. We want to work against that. We don't want them to be able to stop people by saying, *If you don't leave this area right away you will get a fine*. We want people to be able to stay there and not give a shit. In that way, Bødebanken is made as an anti-repression tool where you can do more stuff because your economy won't be fucked.

K: What else are you involved with?

T: I've been doing anti-fracking stuff for the last couple of years. Right now, some friends and I are trying to make a revival of an old anti-capitalist climate group. We will probably do different campaigns and not just have a single focus. We will try to have more of a radical approach and more of an international perspective of what we are doing. Cooperating with groups in other countries will be a key focus.

Another thing I am a part of is the Makværket garden group. Makværket is a giant ceramics factory in the countryside, which is being rebuilt by volunteers, with sustainable materials, as a 10,000 square meter [110,000 square feet] art and culture space. For the past few years, the garden group has been planting a very low maintenance permaculture garden. We just did a two day workshop for a school for adults doing a course on sustainability. We were doing practical workshops on planting trees.

K: One other thing I wanted to ask you about was your son, Sikker. In all of the interviews I've collected about life in Denmark, I haven't spoken with anyone about the infrastructure for children in Denmark. I've heard that the social service infrastructure provides classes for parents who are about to have a child. And after you have a child, there is a person designated to meet with you to help you, someone you can ask for advice and who can give you advice about the different stages of development your baby is going through, and how you can help them in that stage.

T: I can try to give some examples of what its like to raise a child in Denmark. Basically, from when you figure out you are pregnant in Denmark, and you tell your doctor, there is a whole package deal you get. You have the right to meet with a midwife. You have a pre-midwife that you meet with about every second month. Then you meet with the doctor a few times and get different scans. Then there's also seminars you can go to about giving birth, how to breastfeed, how to be a parent, all these things. Sikker's father and I didn't attend them so much, but I know some people do. This is part of the package they offer for everyone. If they think you will struggle more with either your pregnancy or being a parent, they offer you different deals. Like say you are very overweight, they will

offer you help with losing weight. If you are smoking cigarettes you can get courses about how you can quit smoking. The state pays for all of this.

Then, of course, the hospitals are free. They very much encourage people to give birth in the hospital in Denmark, but if you don't want to give birth in the hospital, you have the right to have a midwife come to your home to help you give birth. Afterwards, you can have an overnight stay in the hospital if you like. I think when most people have their first kid they choose to do it in the hospital, but a lot of my friends choose to give birth at home. After you have your kid, there is a healthcare person that will come and see you in your home. We didn't go through this because in the beginning we were in the hospital for the first couple of weeks. But usually in the beginning, I think they come almost every day. After that they come maybe once a month. Then it is like every half year. We stopped doing it because we didn't feel the need for it. They weigh them and check their health, and they also talk to you about things like how to start giving your kid normal food, and what to do in certain situations. It's also to help you become parents, how to navigate in this new parenthood thing. We had a really nice person, but I didn't really feel the need for it so much. I think I felt really confident in my role as a parent. But I think it is a nice support to have. And you can always call them if you have questions or you have something you worry about.

When your kid is one year old, in most municipalities you have the right to get a space in a public institution.

K: Like a daycare?

T: Yes. From year one to year three you go to a baby care institution called vuggestue, and then you go to kindergarten called børnehave until you are six. Then you go to school. School is free here.

In daycare and kindergarten, you pay 25% and the state pays the rest. But if you have a low income you can get it for free. If we decided to put Sikker in a daycare I wouldn't have to pay because I don't have a high income.

The norm in Denmark is that when you give birth, as the mom you have the right to go on parental leave a month before the

date is set. But many people, like if you are an academic, can negotiate well and can get off two months before with full salary. After the baby is born, you have the right to be on leave for eleven months. Six months is only for the mother, and the rest you can split with the other parent. You can also take off a month at the same time so you can be together. During parental leave you have the right to be paid benefits. The state pays it to the company you work for and they pay it to you. If you don't have a job, then the state pays it to you directly. It's not as much money as you would be paid for a full time job, but it is enough to live off of.

It's uncommon to not to put your kid in daycare. Denmark is a very institution-oriented country. There is this idea that it is good for kids socially to be in daycare. You are very much against a norm if you are criticizing the idea of institutions because you are also criticizing the way our working market functions.

Most parents work in Denmark which means that they have to have their kids in daycare. So questioning the institutions also means questioning the roles of both parents having to work, which there is no space for in the way that society is structured here at the moment.



WE DON'T NEED TO GROW  
BIGGER TO MULTIPLY AND  
SPREAD THE IDEA



*We don't need to grow bigger to multiply and spread the idea.*

### How is food distributed? [Cooperatively]

Interview with Nicolaj Bøcher, member of  
Københavns Fødevarerfællesskab [KBHFF]



N: I've been involved with KBHFF for 3.5 years. It is a method of distributing locally produced food for members of the community in a way that brings down prices and ensures people are more in contact with what they eat. All members are owners, workers and customers. All members own the store, work in the store, and visit the store as customers. We want to make organic produce available to everybody.

We can accomplish that in two ways. One is that the concept and structure can be copied. We don't try to hold on to the model for ourselves. We share it with anyone who wants to start up somewhere else. Instead of having a very huge KBHFF with thousands of members, our goal is to distribute this kind of organization, like a network of smaller units, instead of one big one. Another major goal is to lower the price of organic produce, because in Denmark it still is a luxury. Organic produce is 20-25% more expensive than regular produce. In order for everyone to be able to eat organically, the prices have to be lowered.



For me, organic is not the central goal. I think the idea of copiability is equally important. For instance, kiwis are flown in from New Zealand and they are still called organic. It doesn't really have much to do with the ecological impact. Organic is just a word that can be used to sell things more expensively. It

is a very flexible term. It should be just a basic rule that organic vegetables should be produced locally. It is more practical than ideological.

K: What is the history of KBHFF?

N: The inspiration came from one of our members who visited the Park Slope Food Co-op in New York. He was amazed by the idea and brought it to Copenhagen in 2007. For a long time there were a lot of people meeting very enthusiastically about this idea, but were unable to give it another form. If we were to make an exact copy, then we would need a million and a half Danish kroner of start-up capital. It was a very big group of people who couldn't figure out how to get started. People became more committed when this more concrete idea of people picking up a bag of vegetables each week came about. A small, rotational group of members could put the bags together and all the members just needed to show up to grab this unit of food. It became a lot more concrete and people were able to see how they could participate in an easy way. It was possible for people to just be involved for three hours each month and possible for people to spend 100 hours each month if they wanted too. That was what really changed the events. Going from this very fluffy idea of a supermarket in New York and transforming it into an idea that we were able to handle.

K: What was your first storefront?

N: The one in Nørrebro was the first, in August 2009. We started out with 25-30 members. Now in the Nørrebro department there over 250 members who come to pick up vegetables each week. There are four new departments in Copenhagen and two more in Aarhus, which is the second biggest city in Denmark. The new departments in Copenhagen are spread out in other parts of the city, like Vesterbro, which is the western part of the city, and Amager, which is the island south of the city, and Nordvest, which is further out northwest.

Nørrebro, Vesterbro, and Nordvest are three of the 10 official districts of Copenhagen. They are located to the west of the city center.

K: Could you walk me through how KBHFF works?

The appeal of this project is that it is very easy to get into. It costs 100 kroner to become a member. As a member, you can buy a weekly bag of vegetables for 100 kroner and you work 3 hours per month. These three hours are spent helping pack

the vegetables, run the store, or run the organization in some way. In the Nørrebro store, which is the biggest department of KBHFF, the pick up day is Wednesday. A small group of members begin packing at 1pm, then the store opens up at 4pm. Sometimes they need to divide up a ton and a half of vegetables. I think we are reaching 270 bags. It is a very small room, so it has taken a while to organize this growing demand. From 4-6pm members come to the store to pick up a large bag of mixed vegetables they have ordered the week before and they pay for their next bag. They can pay for next week or pay for the next ten weeks or the next two weeks and then skip one week. That is up to them. It only takes 5 or 10 minutes to pick up your bag and order your next bag. These orders are recorded by someone in the store and are available to the buying group so they can see how many orders are placed in all the stores.

The buying group decides what producers we will be buying from. They make decisions independently, but they follow ten guiding principles of KBHFF, which say that our food supply needs to be grown and produced organically and locally, with fair and direct trade. This means the food we supply is based on what is in season within 100 kilometers of Copenhagen. As an organization, our principles guide that we should be financially viable and autonomous – we should be able to exist independently of external support from grants or sponsorship – and we should operate with transparency of how money is spent and how decisions are made. Our overarching vision in KBHFF is to work jointly in our local community to organize around common needs, and thus help the local community flourish.

In our structure, all the stores are equal. The KBHFF association is a separate unit and all the stores are their own units that are self-organized. The more responsibility we can leave to the local groups the better. All the local group stores supply one member to the buying group and two people for the economy group and one person to the collective group, which is in some ways the central group in the whole of KBHFF.

K: What are some of the challenges you have encountered?

N: One of our big challenges is to get people further integrated. A lot of our members are really pressed for time. Most of our

members will do the minimum engagement of three hours per month and get a reduced price on groceries and get to be a part of the community at the same time. It has been difficult to get people more deeply involved.

Something that is very important is that we make ourselves expendable so that new members can step in and take over roles that the founding members have. We need to unhook these roles from specific people. We've all formed our own areas of work. I helped start the economics group. To make it possible for other people to take over is hard to do because people tend to be glad that I have this responsibility.

Another challenge is to make people take you seriously. For instance, the producers and also the City of Copenhagen usually deal with businesses that have a structure that they know with a board and maybe CEOs. They find it hard to figure out how they should treat us because we are somehow between a business and an association, with some kind of humanitarian board. They can't really handle us. That proves to be very useful because a lot of legislation doesn't apply to us. For instance, all the regulations of hygiene that you have with traditional businesses with customers don't apply to us because we only sell to our own members. But also it has been a challenge to be recognized as someone you can do business with and that you can rely on. If you make a deal with one person then this one person will be there the next week and doesn't just disappear or something.

K: Can you talk about the economic group?

N: It is a group where we exchange experiences of how to organize the economy; because people are pretty afraid to handle money. That's been the case with nearly everybody I've talked to. To tell people it should be treated like any other tool, it doesn't have any special character to it. We would like to have an economic system in KBHFF that is based on trust. We can't really check in any way so it needs to be built on trust. The economies of the different stores are independent, not connected. Something that we need to begin working on is to decide how we use the surplus money that is generated. The members have told us that the first priority is to keep the prices low and the second priority is to generate a surplus so that we can have more possibilities. For instance, to grind our own

flour we need to buy a mill.

K: What are your thoughts about the future of KBHFF?

N: One of the good things is that we don't need to grow bigger to multiply and to spread the idea. If we wanted to monopolize the idea and try to control who is using our ideas in other locations we would have to have a huge layer of administration in order to tightly regulate these other groups. One of the advantages of not controlling how people copy your idea is that they can transform it so that it fits with other local needs.

K: How do you see that this could be replicated to other things, not just necessarily food?

N: I see a lot of potential in areas that don't have to do with physical goods because that needs a lot of infrastructure to make that happen. You need a physical space, and someone with a key and you need people to know when to meet and someone should be there to organize the work and logistics of transportation. For instance, energy or Internet, or Internet security could be distributed in a way that would need a lot less labor, if you just needed people to make a few clicks to add themselves to some kind of service. People are pretty attracted to basic needs. For me, it makes sense to start with food, energy, housing, basics for survival, and then to find good solutions to meet these needs.

One of the advantages of KBHFF is that it deals with something that affects everybody. Everybody has an angle on it, and they don't need to agree on the angle. Some are in it for the democratic organization, some are in it for the organic angle, some because it's cheaper, and some because it's more convenient. They can all be involved, packing next to each other, and they don't need to agree on why they are there. The area is common to everyone who eats. All the time we are trying to downplay the speculations of why we are doing it and what we are doing.



100% DISCOUNT



## 100% Discount

How is food distributed?  
[Dumpster Diving]

Interview with Ida Martin and Martin Søbørg of  
Taste the Waste Free Supermarket

I: My name is Ida and I am working in Taste the Waste Free Supermarket. It is an event for a weekend that tries to highlight the problem that too much food is produced and not consumed, so most of it ends up in the dumpsters. That is where we take it up again and place it on nice shelves and give it away for free, just to show how much food is wasted.

K: Can you describe the supermarket and what is going on?

I: Outside, we have a huge dumpster painted on the facade with a sign that says *Taste the Waste*. We made the profile black with orange and blue stripes. You can follow the stripes into the supermarket. When you come in you will see the bakery and then you walk into the next room with all of the grocery store shelves. People walk around and look at the food and actually no one is disgusted by it at all. They just shop as if it was a normal supermarket. At the back of the room there is a big vegetable stand with apples, carrots, mushrooms, cucumbers – everything you would find in a normal supermarket. We have staff that walk around in orange aprons, in the same color as the stripes on the wall. I made these at home. Someone here at the Candy Factory, a social center in Copenhagen where this project was organized, printed a dumpster on the front of the aprons. We have small hats, too. It looks kind of professional and I think we also look a little like elves, or Santa's helpers,

or something like that. A guy called Aske made music for the place, which is that annoying music that plays over the loudspeakers in supermarkets. So we all walk around doing little dances and getting really crazy because you listen to the same four minutes ten hours a day.

M: Right now we are in the bakery of the supermarket. My name is Martin and I'm also working in the supermarket. The shelves are kind of getting empty because it has been so popular.

K: What do you have on the shelves right now?

I: Mostly vegetables and fruits.

M: And some flowers and coffee. We just ran out of cheese. We had some really nice cheese.

I: Hmm, what else? Hair products, cereals, jam.

M: We found some oil with vanilla and different herbs. Over there is some red wine we found.

K: What kind of bread is in the bakery case in front of you?

I: I have long French baguettes, some croissants, some buns with different kinds of fruit, and then I have some rye bread. We get the bread from the bakery after closing hours. This bread is from about 6:00 pm yesterday.

K: What was the process for finding all this food?

I: We've been about 20 people getting this event together. Around 12 people go out at night, diving into dumpsters, bringing it home, washing the vegetables, cleaning everything so it looks really neat and nice. We knew where to dumpster dive because a lot of us dumpster dive routinely to get food. It's pretty easy to eat all your food from the dumpster in Copenhagen because so much food is thrown out and the dumpsters aren't heavily secured. For this event we built shelves and got some refrigerators and painted some things on the walls to make it look really discount supermarket-ish. But the process is really hard because everything is nonprofit and everything is free. So we won't get paid and we put a lot

of hours into it. It is really busy and everyone is helping each other but we can't do it forever. So it is really nice it is only three days.

K: What kind of reactions do people have?

I: A lot of people are amazed seeing how much is thrown out every day. And this is only a fraction. I think some people think it is just a funny event, *Ok, this is something different happening in our little town, let's go see what is happening.* People are curious coming in and looking, *What's this, I heard about it, can I take a little bit?* For others, some people just want free stuff.

M: Not really thinking about the agenda of the project.

I: It is not our goal to tell people directly that this is a huge problem. We just want to plant a seed in people's minds that this is actually just a small window, a small scale of what is happening worldwide. Hopefully, they will go home with their wasted free food and think, *What is this about, actually?* Maybe if they took too much and they have to trash it themselves then maybe they learn something. Some people get really greedy, actually, because it is free. That is another problem that is really huge, that this discount and the two-for-one price that makes people take a lot of stuff home that they don't really need just because it is cheap. Often you can't buy just one of something, you have to buy two or three of something, or more.

I think it is important that it is something for people to come and experience, instead of pointing fingers and telling a lot of facts. By doing this, people go home and think that they had a good experience. Somehow, I think that it stays with people.

Customer: Could I have a some bread, please?

I: Baguette? Rye Bread?

Customer: Rye, thanks. And maybe a croissant just for the fun of it.

I: [Handing over the bread] Have a nice day.

K: [To customer] What did you get?

Customer: Cucumbers, bananas, one beer, some asparagus, onions, mushrooms, and bread.

K: [To Ida] Could you tell me what some of these signs you have on the shelves mean in English?

I: This sign says, *100% Discount on all fruits and vegetables*. This one says, *Extremely cheap flour and oats*. Then we have *The five finger discount*, which is when you grab everything like a thief. The sign by the cash register is about what you should think about when you take the food home. It says, *Always use your mind and common sense when eating food that is expired. Like everything in life, it is very good to think*. Because the date on the food is always guiding, but the food can often be eaten when it is days too old.

K: This supermarket is just a small part of the larger space here, The Candy Factory. Could you talk a bit more about what the Candy Factory is.

I: This place, the Candy Factory, is filled with very nice ideas. Normally, if you have an idea you present it and people will say, *I would like to join*. Then things happen really quickly and suddenly you just do it and it works. It is a really good feeling that whenever something is happening people just stand up and help.



SOMETIMES IT IS THE ART  
OF SAYING NO



*Sometimes it is the art of saying no.*

### How is culture self-organized?

Interview with anonymous activist at  
Ungdomshuset [The Youth House]

Vej is the Danish  
word for road.

K: Could you give a brief history of the youth house and what the current state of the youth house is?

A: The history of the house goes back to the 19th century when the workers' movement built the house for workers to have as a community center and to do political activity from the house. In that sense, it has been a political building from the start. It was located at Jagtvej 69. Now we are in the new youth house at Dortheavej 61. The old house, at Jagtvej 69, used to be called Folkets Hus, People's House. There used to be several of them in Copenhagen. It's actually where the Women's International Day was founded back in 1910.

The workers gave the old house to the youth of Copenhagen back in 1982. Then the government found a "health and security" legal loophole that made it legal for them sell the Youth House and evict us. The house was sold to a shell company that was owned by a Christian right wing sect. They had the place torn down. It was definitely dodgy, to say the least. For them, it was a crusade against the communists, anarchists, Muslims, devil worshipers, homosexuals, and pro-choice people. The sect went bankrupt, so a developer bought the land, but nothing has been built there yet, because it is so controversial.

I started coming to the old youth house when I was 14. I was going to punk concerts, hanging out in the backyard in the middle of the night, being impressed and scared with all the grown up punks. I got more involved with the Youth House when it was closer to the eviction. The last couple of years before the eviction was a very stressful time in the house. No one knew when the eviction would take place and there were different campaigns to try to keep the house.

Some friends and I started doing some work for the house, making blitz attacks of punk rock concerts on wheels. We would go out in a truck to different areas of the city and have punk concerts for 10 or 20 minutes, depending on when the cops would show up.

At one point, the eviction became imminent and we started to strategize to get a new house. The whole process of fighting the eviction and getting a new house involved hundreds and hundreds of people doing different things, different forms of action, different ways of trying to affect city politics and changing people's thinking about the youth house and the need for self-governed spaces. People organized demonstrations, participated in direct actions, squatted buildings, went on international tours to talk about what was going on. They did all sorts of things. When we eventually got this new house that we are in now, I decided I wanted to be a part of building it with some ideas from the old house, of how to have an autonomous space, but also trying to build something new. You can't move a place that has been torn down. I wanted to help build a place where you can go and have experiences as young and old political activists in Copenhagen.

When we got the new house, we basically altered everything inside of it. The new Youth House has two concert venues, creative workspaces, a cafe, and a gym. I've been very active in running the bar, which basically is the economy of the house. There's a lot of people doing some really cool stuff out here now. There's band rehearsals. There's different trainings, martial arts and yoga. There's different food groups, every Thursday there is a people's kitchen, and Saturdays we have brunch. There's different building groups and all the people that make concerts out here. I'll give you a tour later.

I think we need a space like this. I would like to see a space

like this in every city. It is a good way to express your political views through actions instead of just discussions, pamphlets or web pages. It's a place where you can actually try to live some of the political ideas you are discussing with your friends. It is a space where people can come listen to all kinds of music on the weekends and not have to pay ridiculous amounts of money on entrance fees or for a beer – and at the same time not having to deal with all the sexism that is predominant if you go out in general. The problem with sexism in society was one of the reasons I started coming to the old house. I was really sick of being touched by strange men.

K: Even when you were 14?

A: Yeah, if I went out. It was a big relief for me to be able to go to a concert and have a few beers and relax and not feel threatened and not having to look over my shoulder all the time to see when the next guy would try to grab my ass. That was a big relief for me and a reason why I kept coming back, in addition to the other politics about no racism, no hard drugs, no homophobia, no violence – those are the ground rules of the Youth House. I think these values are worth protecting and I really like being a part of creating a space where we try to live by those values.

If we have a band coming to play here, they don't get to play here if they have sexist or homophobic or racist lyrics. If they do have such outbursts when they are playing, the electricity will get shut off. That's also how we try to be with each other, so if someone feels violated by how people are talking to them, we address it. It's a work in progress, it's not perfect. I think that one way to change society is to change the way I interact with other people.

K: How are you doing that?

A: The way I approach it is trying to name it. If I see it in myself or in the way other people act, I try to bring it out and say, *Hey, what are we doing here? When we do this it is actually discriminating against ourselves and our friends. How can we change that? How can we change the way we relate to each other?* It is a learning process because all of us have grown up in a capitalist society where it is normal to discriminate and it is socially acceptable to repress others.

K: What role do self-organized social centers play in changing the way we relate to each other? In the US, there are very few social centers like yours, but social centers are rather common in Europe. Here in Copenhagen, there are other social centers in addition to the Youth House, like the Candy Factory and Folkets Hus.

A: These places create alternative spaces where it is possible to have anarchist and socialist viewpoints and try to live by them. It is difficult to do this if you are alone. These spaces can be a platform for introducing people to different ways of living, through soup kitchens and vegan food, alternative music concerts, DIY bike workshops, through an affordable cultural life. It can be non profit. It can be not to gain money from the people enjoying music.

For me, socialism and anarchism are to have a humane approach to each other. It is to have freedom for the individual but not at the cost of others. It is to have the opportunity to develop yourself, but with others. The idea of doing things in collectives is very big. To not be individualistic about things, which is not the same to say that you can't be your own person. But the idea is that we would be better people if we did things together. Human beings are social beings, so if we take away the socialness of being, then you have a very sad life more prone to violence and discrimination.

Self-governed spaces have a downside as well. If no one takes on the responsibility to do something, then it won't get done. This leaves a lot of pressure on people who feel obligated to fix things if they see it is broken. Some people are very good at ignoring something they see is broken for a very long time and other people are not very good at that. Sometimes this creates an unequal distribution of workload, which can lead to burnout for the very committed activists. Sometimes it is the art of saying no.

K: Can you give me a tour?

A: The Youth House is comprised of two buildings that are adjoined by an aboveground walkway. On the top floor of this building there are four band practice spaces. There are 8 or 9 different bands that rehearse here. This is the band room for different touring musicians who play here, so they have a place

to stay. They are in the process of building a recording studio up here too.

On the next floor down is the creative room with screen printing and an improvised darkroom to make screens for printing on t-shirts. This is the office. We are trying to get a print shop up here as well, so people can make fliers and posters and magazines.

It's ok to paint and graffiti on the stairways. If someone has made a big wall painting then you shouldn't paint over it.

This room is where we stay when we have night shifts. When we first moved here we had problems with late night attacks on the house. We have had a series of break-ins, mostly by local kids from the area, sometimes setting fire to our garbage containers and stuff like that.

On the ground floor is the big concert room that fits 600 people. We have concerts every weekend, a lot of punk and hardcore shows. If you want to get involved with the youth house, you can help put on the shows. You can even learn how to do the lights and the sound.

On the ground floor of the second building is a smaller concert venue called Dødmaskine, which is Death Machine. When we moved in we turned it immediately into a stage and a bar so we could have a venue. We started putting on shows straight away.

The house is not vegan, the kitchen is though. It's here on the first floor of the second building. It's easier to keep it hygienic and everyone can eat it, no matter if you are a meat eater or vegetarian or Muslim or Jewish. It's a commercial grade kitchen we built from scratch. We have certificates from the health department. In Denmark, we have a system where you get a smiley face if the hygiene is ok and if you get five smiley faces in a row then you have an elite smiley. The kitchen actually has an elite smiley. This kitchen is run by all the professional standards and I think a lot of people are surprised by that. A lot of the house is really dirty and chaotic, but the kitchen is clean. It's also part of the way that we challenge prejudices about this house. People also get surprised by the book cafe that adjoins the eating area. Some books are for sale and then we have a library where people can borrow the books.

The people's kitchen on Thursdays and brunch on Saturdays is a great for people who have children, because a lot of activities in the house are not very children friendly. You can bring your family and your dog and have some nice food and hang out. That's a good thing because the whole activist scene in Copenhagen can tend to be a bit excluding of people who have kids. People seem to withdraw from political activism when they are starting a family, I know it is tough to start a family so you can't really do things that you used to do, but I think it is too bad that people drop out when they start families. I would like to see more people still being active in the ways they can with their kids. I think it is easier to have families and activism if you are living collectively in the same space, but that's quite difficult in Copenhagen because it's nearly impossible to squat here and housing is very expensive so it is difficult to find a place big enough for a collective which is more common in Spain.

Up here on the top floor is the gym. We have classes in self-defense, mixed martial arts, kung fu, and yoga. The same ground rules apply here and we try to cultivate an environment that's different than the machismo you find at most gyms. This is a room where it is not allowed to trash things, and people stick to that so the floor is nice, which is good when people are doing yoga on the floors.

From here, you can see the culture house that adjoins the Youth House. It's one of the many culture houses around Copenhagen that are operated by the municipality. All of this was part of the culture house and we were given half of the buildings. The culture house was totally up for that. They thought it was a great idea. It also meant they got a brand new building built for them. It is a new library. So I think they are pretty satisfied. The guy who runs the community center is a really cool guy. He likes us and we like him. So we try and do things together and work out agreements on how to share things. It is good to have good relationships.

The building is the property of the City, but we have an agreement that gives us a right to use the building. It's the way that the politicians could give us a new house without losing face. There is a formal set of rules which we comply by to some extent. Then there's a lot of grey areas. We are not allowed to have a living collective here, but we are allowed to have night

watches and places where people can take a nap.

K: Do you pay rent?

A: There is a funny arrangement. We pay for the utilities, like water electricity and heat. Formally, we pay rent to the City, but in turn every month they give us the same amount of money, because of being a community center and doing cultural things with young people in Copenhagen. In their bookkeeping we pay rent. The money goes from one account into another account. It is probably the same money that gets recycled every month.

The youth house is an opportunity to create my own space with like-minded people. If I participate, then I will have an influence. I can shape this place with what I like to do, within the limitations of not discriminating against others. It is a creative life form. It is something you learn a lot from. When you work with other people you share skills. You learn to do stuff you wouldn't normally get to learn. Here you learn all the time from the different things you have to do. I learned accounting, I never thought I would learn that. Sometimes you learn to fix the plumbing, you learn to make a big event, or you learn how to work with other people even though you might not know them very well.



## AMERICA THE MOLOCH

## How does it feel to read Danish oral histories for hours?

Editor's note by Teddy Marino

The god awful part of being a privileged, white American is feeling bad. This only happens if you are conscious, which only happens if you haven't choked on the same old shoot-em-til-they're-dead lie that you're in this thing all alone.

If we were in this thing all alone, I would applaud the greedy bastards who own coal mines and oil wells, and the delusional half-wits who itch at the chance to bomb Muslims from a remote control tower halfway across the world. I would say, you have your world, and you are entitled to poison it, explode it, and love your neighbor as if he were about to terrorize you, but too bad, I terrorized you first. It's your world, kill every soul in it, if you please.

I hate being American. Because being American means you're part and parcel to a moloch that does whatever it wants. It farts on Mexico. It burps on Canada. It rim-jobs Europe. It clenches its anus and titters at Africa. It sixty nines with China, full of little aggressive nibbles.

I hate America, but I am American. I didn't create this overwhelming wealth, and neither did anyone. For some painstakingly complex reasons, we are rich. And wealth has never corresponded to goodness. After all, we are in this alone. Global warming doesn't exist, puff puff, and the legacy of black slavery is a joke, chain gang lock 'em up and throw away the keys.

Strangely, my people are not my people, or even their own people. They are the hairs, pores, skin, eyes, and hands of an American moloch eating its fingernails to the bone, and burning alien children alive. Burning spirits, sometimes bodies.

I do not understand America.

After reading this book, I understand a little of Denmark.

Some of you vote for moronic cowboys obsessed with wealth and power. Still, most of you are better off than us Americans. At least your dumb cowboys know global warming is real. And you have a genetically embedded tradition of cooperation. *It's only democracy if there is compromise*, one interviewee says, *otherwise it is the tyranny of the majority*.

Many towns in Denmark have windmills to generate electricity. Regular old townies own the windmills. Coal plants, working relics of the past, don't just deliver electricity. They also deliver heat. What else would you do with the extra heat? Throw it into the sky? Into the ocean? Up sweet mother earth's behind?

Towns have culture houses and youth houses, funded by local governments. There is an island in Denmark that boasts an average of negative 2 tons of carbon emissions per person per year. There is a sewage plant in Copenhagen that makes outreach campaigns to educate the people on *how not to be an asshole to their toilet*. They hired a pop star to create a rap. Now this particular point, of the rap, is when I aboutface and salute my country.

After all, Americans invented rap, and the toilet. No, we didn't invent the toilet. An Englishman did, which still counts.

If you Danish bastards are so smart, why haven't you yet infected us with your world-saving innovation and democratic socialism? Why haven't you learned to poison our water with goodness and egalitarian libido?

No one's perfect. It took an ultra-patriotic American to slip this poison home. Thank you, Katherine, for being the invisible tip of a hidden nose hair of a moloch, making his big red nose twitch with a conscience. So be it.

