INDUSTRIAL PIG FARMS AND THEIR ENVIRONMENTAL IMPACT

- Case study Smithfield in Romania -

September 2006
TERRA Mileniul III

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Terra Mileniul III's mission is to develop ecological programmes in order to raise public awareness regarding the effects of climate change and to promote programmes for sustainable development at national, regional and global level.
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Introduction

TERRA Mileniul III launched an allarm signal in July 2005 on the dangers of Smithfield's (an American pork integrator) expansion to Romania, considering its negative history in the United States and Poland. This material is addressed primarily to the local administrations in the western part of Romania, where Smithfield intends to expand its production network.

The present document does not attempt to put in balance the economic benefits brought by Smithfield's investments and the alternative development opportunities, instead it aims to review what industrial pig farms are, their environmental and health impact. The current analysis started with the information on one of Smithfield's projects in the western part of the country, in the Masloc commune, and then moves to general aspects of pig farming. The data regarding industrial pig farms has been extracted from the US experience in this regard.

We would like to underline that, in this material, through the use of the phrase "animal waste" we do not wish to imply that all "by-products" in animal farming are "wastes", as they can be used as fertilisers in certain conditions. We have tried to use less offensive language in doing so, even though the realities described can be unpleasant - those that have even been anywhere around a pig farm know what this is about.
1. Industrial pig farms in Masloc

Masloc is a commune with 2100 inhabitants, in three villages, approximately 35 km away from Timisoara, in the western part of Romania, where two pig farms have been planned. Their capacity is 8,160 animals each, 1 km from the residential area. The investors are SC Comtim SA (Smithfield) and Agro CD SRL. In 2004, Smithfield bought Comtim SA\(^1\), a pig complex, and its initial plans for the Timis county consisted of the construction of 250 farms with a total of 4 million animals by 2010. Subsequently, the Timis County Council limited the number of farms to 100 and the number of animals to 1 million; the Council decision approving Smithfield's investment programme by one vote. The authorisations and permits don't seem to concern the company much though, which is shown for example by the fine applied by the Environmental Guard in the case of the Birda farm in May 2006\(^2\), or by the fact that the works on the access road for the projected Smithfield farm in Masloc were launched without a construction permit.

The pig farm projects received the approval of the Masloc mayor, and one of the projects was also approved by the Local Council (July 2005, the Agro CD farm). Later on, in June 2006, the Masloc Local Council issued a decision rejecting the construction of pig farms on the commune territory and extending the residential area of the settlement.

The Smithfield farm in Masloc received an integrated environmental permit, and the farm is currently under construction. The only important change in Smithfield’s project that the Environmental Protection Agency imposed was the installation of above-ground metallic basins for liquid waste storage. According to the data published by the Timisoara Regional Environmental Agency, by August none of the pig farm projects had gone through the strategic environmental assessment procedure for plans and programmes (they haven’t obtained the environmental permits for their urban planning documents), so they cannot have legal construction permits.

Environmental permits were granted for pig farms in the following settlements:
- Igris (2 farms), Sannicolau Mare (2 farms), Jimbolia (2 farms), Nitchidorf (3 farms), Sanpetru Mare (1 farm), Masloc (1 farm), Periam (1 farm), Bocsig (1 farm), Cermei (2 farms) - beneficiary: SC Comtim Group SRL (Smithfield);
- Masloc (1 farm) - beneficiary: SC Agro CD SRL;
- Jimbolia (1 farm) - beneficiary: SC Abelda SRL.

\(^1\) Smithfield also owns 50% of the distribution company Agroalim Distribution and a 50% participation in the Frigorifer storage facility in Tulcea, on the Danube.

\(^2\) RON 35,000 (EUR 10,000) fine for operation without environmental permit.
The permitting procedure has also been launched for pig farms in the following settlements:
- Checea (2 farms) - beneficiary: SC Top Suin SRL;
- Checea (1 farm) - beneficiary: SC Tim Suin SRL;
- Teremia Mare (1 farm) - beneficiary: SC Sequoia SRL;
- Iecea Mare (1 farm) - beneficiary: SC Prod Suin SRL;
- Fibis (1 farm) - beneficiary: SC Agrotorvis SRL.

The main environmental impact in the case of pig farms is related to animal waste management. The manure at the Smithfield farm would be stored in two basins (5000 m³ each) and then spread over arable land within the commune, even though Masloc is a vulnerable area from the point of view of nitrite pollution\(^3\). The farms would also involve the release in the atmosphere of considerable quantities of ammonia, methane and other bad odour substances. In this respect, we need to consider the current agri-touristical exploitation\(^4\) and potential of the area, as well as the disturbance of existing activities (including the clinic in the village\(^5\), pensions, inflow of foreign tourists etc.). The benefits from the construction of the farms would consist of the potential development of local businesses, employment of four persons per farm and some taxes to the local budget. After being informed on these projects by representatives of the Local Council, the commune residents expressed their opposition to the farm projects, with lists containing 160 signatures.

\(^3\) According to the Order of the Minister of Environment and Water Management no. 241/2005.
\(^4\) There are a few pensions in the area, a school camp at Bogda (10 km from Masloc), the forest reserve Bazos (Remetea Mare - 60 ha), gliding, fishing and birdwatching.
\(^5\) Clinic with natural and homoeopath treatment, with 20-25 persons in daily, where 4 medical symposiums are organised each year, and social programmes are developed with students in the area.
2. Large versus small pig farming

There are two methods of breeding used in farming: with bedding and without it, which, besides technology, differ in type and amount of waste produced. In farms with bedding, considered as more environmentally friendly, the resulting waste large amounts of dry (mainly organic) mass (20-30%). However, it is difficult to implement farming with bedding in farms focused on industrial production of animals, among others, because of its high costs and problems with hygiene maintenance. This resulted in establishment of farming without bedding, most often used in swine production. It leads to serious environmental danger because it results in the production of liquid manure with high mineral and microbiological concentration.

The industrial farming system implies large herd/flock sizes, large volumes of waste, high animal health risks, and less attention to animal welfare. It has multiple opportunities to dump its waste products without accounting for the environmental costs. There are, however, solutions which could substantially reduce the negative environmental effects, although at a cost. The biggest challenge that the sector faces is to identify technologies and establish policies that will internalize the environmental costs.

Today's large hog farm operations look more like animal factories than animal farms. A typical industrial hog farm operation uses a series of metal barns each containing hundreds or thousands of pigs confined side-by-side in metal slots. Slotted metal floors allow feces and urine to drain out of the crates where it is piped into storage facilities. Whereas traditional farms allowed manageable levels of manure to be taken up in large open pastures, today's high-volume factory hog farm has to deal with an enormous quantity and concentration of manure at a single site. Manure lagoons hundreds of square metres in size are not uncommon and can contain millions of liters of manure. A single hog produces as much waste as four people. Not surprisingly, a single factory hog farm can generate as much waste as an average-size town.

Disposing of vast quantities of hog waste has resulted in widespread and occasionally devastating environmental pollution. Nutrient contamination from nitrogen and phosphorous kills fish, causes algae blooms, suffocates a range of aquatic life, and leads to Pfiesteria outbreaks. High levels of nitrogen leaching into

6 Microorganism known as a dinoflagellate. It was first discovered in 1988 at the North Carolina School of Veterinary Medicine. Since that time it has been said to have caused half of the major fish kills from Delaware Bay to the Gulf Coast. Researchers have suggested that possible causes of Pfiesteria proliferation may be increases in nitrogen and phosphorous from fertilizers and animal feces in runoff from fields and dams that affect the flow and nutrient levels of rivers.
drinking water have been linked to increased risk of blue-baby syndrome. In 1996, the Center for Disease Control, the United States, linked high levels of nitrate levels in Indiana well water near feedlots to incidents of spontaneous abortions in humans. Heavy metal contaminants added to feedstock such as zinc and copper stunt plant growth, affect the growth of nearby crops, and create toxic waste. Finally, pathogens such as bacteria and viruses can contaminate drinking water causing gastrointestinal illness and occasionally death. Studies of medical conditions of residents living near factory hog farms have found higher levels of respiratory illness and behavioral effects. Seeking to dispose of vast quantities of waste, factory hog farms typically apply far more manure to concentrated areas of cropland - often with large irrigation sprayers releasing liquefied manure and urine - than the soil can absorb. So much waste is typically released that soils often fail to incorporate the manure leaving it to run off into nearby lakes and rivers. Unable to perform their purifying function with so much waste, over-application of hog manure has poisoned drinking water supplies in many communities. And from time to time, spills from manure lagoons devastate nearby lakes and rivers. Pollution is not limited to water. Large amounts of methane, a major greenhouse gas, are released from manure lagoons. Hydrogen sulfide is also released from hog manure and has been linked to dizziness, nausea, vomiting, and blackouts in residents near factory farms. At high concentrations, it can cause brain damage. Safety limits for hydrogen sulfide are regularly exceeded at factory farms. And finally ammonia, a toxic chemical released from hog waste, can be carried as far as 500 kilometres through the air before being deposited into water or onto the ground where it can contaminate groundwater, cause algae blooms, and kill fish.
3. Pig waste - fertilizer or toxic waste

Hog waste contains a significant amount of nitrogen that evaporates into the air as ammonia (a highly reactive and biologically available form of nitrogen) and falls back to the land and water bodies when it rains. A small portion of it is lost as nitrous oxide ($N_2O$) which is the most damaging greenhouse gas that depletes the ozone layer - it is 320 times more damaging than carbon dioxide. Atmospheric nitrogen deposition, though beneficial to the extent that it may be easily absorbed as fertilizer if it falls (with rain) on a crop, can actually cause more harm than good to the environment. It can destroy natural habitats, trigger algal blooms that rob the water of oxygen and changes in population species. Research studies in North Carolina showed that airborne ammonia nitrogen released from hog farms were at levels that were higher than those from all the other state livestock and industrial sources put together.

There have been numerous cases of hog waste spills. Animal wastes are carriers of parasites, bacteria and viruses including salmonella, campylobacter, e.coli, cryptosporidium, giardia, cholera, streptococcus and chlamydia. Cryptosporidium and giardia are found to be resistant to conventional chlorination and therefore there is greater probability of drinking water contamination when lagoons containing high concentrations of hog manure leak. Of the 60% of rivers and streams in North Carolina that the US Environmental Protection Agency identified as polluted, it found that agricultural runoff from production activities in hogs, poultry and cattle was the largest contributor to pollution.

Since hogs are fed with feeds fortified with heavy metals like copper and zinc to prevent disease and improve digestion, this can pose a serious problem because in the long run these heavy metals can be toxic to plants and animals even at low concentrations.

3.1. Health Effects of Pig Waste

Animal wastes are carriers of diseases, and some of the components of pig waste that have direct adverse effects on human health are pathogens, nitrates, and hydrogen sulfide. Pathogens can contaminate water and cause gastrointestinal diseases. These microorganisms are 10 to 100 times more concentrated in hog waste than in human waste. High levels of nitrogen in drinking water increase the risk of methemoglobinemia or, more commonly known as the blue baby syndrome. The nitrate converts to nitrite as it enters the body and affects hemoglobin, the red corpuscles in the blood that carry oxygen throughout the body. With this, hemoglobin transforms into methemoglobin, which does not transport oxygen thus resulting to less oxygen getting to vital tissues, and especially to the brain. Critical
cases may lead to brain damage or even death. Mainly vulnerable are six-month old infants, pregnant women and adults with immunity deficiencies.

Pfiesteria is a harmful organism, exposure to which may cause skin irritation, short-term memory loss and other cognitive impairments. This organism, according to some medical reports, is also responsible for the open sores in the skin of individuals who spend a lot of time in water.

The vapor emitted by swine farms, which contains noxious gases such as methane, ammonia and hydrogen sulfide, filter through the skins and houses of people living near the farms. While methane and ammonia are large contributors to the greenhouse effect, hydrogen sulfide greatly affects human health. Hydrogen sulfide, usually associated with a "rotten egg" smell, has caused symptoms such as nausea, blackout periods, headaches and vomiting. The odour not only sinks itself into clothing and furnishings but also to human tissue. Studies into the matter found that people living near hog farms suffered from significantly higher levels of upper respiratory and gastrointestinal ailments than those living near cattle farms or in non-livestock farming community. Furthermore, well water testing results showed higher levels of nitrates in wells near hog farms posing risks to infants below 6 months old. Those people who were also living near hog farms suffered from headaches, runny noses, sore throats, excessive coughing, diarrhea and burning eyes.

3.2. Odours

Environmental odours can and do have considerable effect upon a population's general well-being, affecting both its physiological and its psychological character. For some people the resultant symptomatology is both transient and difficult to accurately define. This includes things like nausea, headaches, shallow breathing, coughing, sleep disturbances and loss of appetite. That said, reputable institutions like the Harvard Business School and the University of Iowa have done studies showing negative effects on the mental and physical health of people living near hog factories. In addition to odour malfeasance, neighbours appear to be experiencing elevated rates of health symptoms related to the upper respiratory tract as well as immune system damage.

3.3. Hydrogen Sulphide (H₂S)

There may well be up to 300 different substances that cause the pungent odour of liquid hog manure. Two of the best-known inorganic compounds present are H2S and NH3. It would be remiss not to mention the others, which include alcohols, aldehydes, amines, esters, sulphides, mercaptans.
H$_2$S is well known to everyone as the rotten egg smell and anyone who has ever been in close proximity to a paper mill is familiar with this one. It is a substance that is well understood and well regulated in many industrial operations due to its known toxicity. It is colourless, denser than air and tends to collect in low-lying areas and indoors near floor surfaces. It can be detected at levels as low as 1.1 parts per billion by volume (ppbv). It is highly poisonous well below levels measured in liquid hog manure odour of up to 500 parts per million (ppm) and acts as both an irritant and an asphyxiant. Acute exposure to high concentrations even over short periods of time can and has resulted in death. In fact workers exposed to levels as low as 5 ppm are likely to have accelerated deterioration of neurobehavioral function. At moderately high concentrations (100-400 ppm) it produces rhinitis, cough, dyspnoea, tracheobronchitis, and possibly pulmonary edema.

3.4. Ammonia (NH$_3$)
NH$_3$ from the urine and feces can be detected at 37 ppbv and inhalation of excess amounts can cause severe respiratory damage. It should never exceed 70 ppbv at the property line, yet outdoor tests in Iowa ranged from 66 to 330 ppbv. NH$_3$ vaporizing from liquid hog manure sources can be carried with precipitation. It should be noted that one third of the workers in the intensive hog operations will develop chronic respiratory illnesses. Some of these illnesses are due to toxins (e.g. endotoxins or glucans) from inhaled microbes. There are masses of studies and evidence to support all kinds of illnesses within the population who live within 5 km of one of these industrial hog factories. Admittedly it is not all solid epidemiological data and this is one of the reasons that in August of 2002 the Canadian Medical Association strongly recommended a moratorium - to scientifically collect and study this data under controlled experimental conditions.

3.5. Volatile Organic Compounds (VOCs)
Hundreds of VOCs are present in liquid hog manure. Their odiferous character can offend even the hardened rural residents. Volatile organic compounds, responsible for noxious odours, also create huge concerns for neighbours, particularly when large volumes of liquid manure are stored for months at a time in open lagoons and when sprayed on fields. The odours can have a devastating effect on health, while permeating people's homes and drastically reducing their quality of life.

3.6. Biological Oxygen Demand (BOD)
Liquid hog manure is 30 times more toxic and has a BOD 160 times that of raw human municipal waste. When this material enters the water supply, it chokes off the normal aquatic life. This is seen in areas of stagnant water where there is a lack of oxygen resulting in fish death; eventually, algae take over. Taken to the extreme
as experienced in North Carolina, the fish become prone to attack by Pfiesteria piscicida, a tiny one-celled animal that produces an extremely powerful neurotoxin which paralyses the fish, sloughs their skin and eats their blood cells. Pfiesteria piscicida is capable of doing the same thing to humans. Not only is there a very real and valid concern of liquid manure run-off when the manure is applied to fields, but an additional threat looms due to the fact that all hog waste lagoons may leak.

3.7. Pathogens
There are up to 50 known pathogens, which have been measured in the waste material of the lagoons from these industrial hog operations. The most familiar, E-coli, forms in the intestines of warm-blooded animals. Another major pathogen is cryptosporidium. Cryptosporidium was directly responsible for the 1993 contamination of the Milwaukee water supply, resulting in over 400,000 people getting sick and over 100 deaths. Other infectious organisms include Campylobacter and Salmonella.

3.8. Antibiotics
Hogs in confinement are virtually kept alive by massive doses of sub-therapeutic antibiotics to prevent illness due to crowded conditions and to promote growth. The growth rates are unnaturally sped up with these antibiotics along with hormones and heavy metals added to the feed. Up to 80% of the antibiotics administered to the hogs are excreted, unaltered, into the liquid manure. Consequently, antibiotics, as well as antibiotic-resistant bacteria, join the nitrogen, phosphorous, heavy metals, and other swine manure constituents that find their way into, and degrade, surface and ground waters. The medical profession has warned of the dangers of antibiotic resistance and the threat to our ability to treat human diseases for several years now. In 2001, the American Medical Association cautioned against the routine feeding of antibiotics to livestock, an issue factory farm opponents have pushed for years. Doctors say feeding antibiotics to healthy animals encourages bacteria to become antibiotic resistant. If the bacteria are passed on to humans, the drugs are no longer effective. The European Union has banned non-therapeutic agricultural use of antibiotics that are important in human medicine. In some European countries, such as Sweden, using any antibiotics in the raising of hogs is illegal.

3.9. Nutrient over-enrichment
Phosphorous (P) and Nitrogen (N) are the two major nutrients in manure. When present in excess however, they become serious water pollutants. At high levels phosphorous is acutely toxic to fish. At lower levels both phosphorous and nitrogen stimulate excess vegetative production which alters the ecosystem. This
eutrophication process results in severe degradation of a water body when the vegetation decays under conditions that deplete the oxygen. Nutrient pollution is also implicated as the trigger for the development of the marine micro-organism Pfiesteria piscicida mentioned earlier. Children in the first six months of life are particularly vulnerable to high nitrates because foetal haemoglobin is more reactive than adult haemoglobin; also the flora found in the stomach of infants facilitates conversion of nitrates to nitrite. Nitrates can also combine with amino acids in the human gut to form nitrosamines - suspected carcinogens.

3.10. Spills
Accidents are not planned, they just happen. Across Ontario, 5,025 spills are reported on average each year, and one-fifth of these spills pollute a watercourse. While oils and fuels account for the majority of spilled materials, manure spills have been the leading cause of fish kills in the region since 1988. This is followed by chemical, oil/fuel/gas, and sediment spills. 14% of all reported manure spills resulted in fish kills. There were 503 manure spills reported between 1988 and 1999. The cumulative build-up of heavy metals which are added to the feed (especially zinc and copper) can eventually render a soil dead and unfit to grow anything, as well as pose a serious health risk to the small segment of the population subject to the retention of these heavy metals.

3.11. Tourism and Property Values
The stench from uncontrolled, ill-disposed and untreated hog waste has been found to depress the real estate values of properties near hog farms. In an Illinois county, the property values for homes near hog factories were found to have declined by 30%. In North Carolina, there are concerns about the impact of odour and water pollution generated by industrial swine operations on tourism and fishing industries. A similar situation occurred in the Polish countryside where Smithfield owned companies started their operations.
4. Pig farming in the United States

Over the last 20 years, the U.S. pork industry has undergone the most dramatic consolidation in its history. Family hog farms are disappearing in every region of the country. Taking their place are industrial hog factories owned by a few large corporations. While the U.S. produces about the same number of pigs every year - around 100 million - the number of hog farms has, nevertheless, fallen from 600,000 in 1985 to 86,000 in 2000. And the trend is accelerating. The U.S. Department of Agriculture has reported that roughly 2% of the hog farms in the country produce over 46% of the total number of hogs. In 1999, the following top five hog-producing corporations - known in the hog raising industry as "integrators" - produced more than half of the nation's pigs:

1) Smithfield Foods (695,000 sows),
2) Premium Standard Farms (201,000 sows),
3) Seaboard Farms (175,000 sows),
4) Prestage Farms (122,000 sows), and
5) The Pork Group/Tyson (110,000 sows).

Contrary to industry claims, hog factories do not produce pork more efficiently than family farmers. Rather, the industry's ability to transfer many of its true costs of production to the public has given it an artificial market advantage over the traditional family farm. The industry has then used its substantial political influence to paralyze regulatory agencies that have been set up to protect the environment, public health, and public values.

The U.S. Fish and Wildlife Service, bureau in the Department of Interior, has reported that manure runoff from all sources has contaminated 60,000 miles of fisheries along the nation's streams and rivers. And the Environmental Protection Agency (EPA) has identified 17 states where groundwater has been impaired by manure containing dangerous fecal bacteria. In just the last few years:
- a burst hog manure lagoon in North Carolina released over 90 million litres of waste - more than twice the oil spilled by the Exxon Valdez - killing 10 million fish and closing over 140,000 hectares of wetlands to shell-fishing;
- in Indiana, LaGrange County health officials identified six miscarriages among women living near hog farms and using water that had been contaminated with high levels of nitrates;
- in a survey of more than 1,000 wells in North Carolina, 34% located next to poultry and hog farms had elevated nitrate levels;
- more than 50 Minnesota families complained of severe health symptoms after 17 factory hog farms moved into the county. The state subsequently reported that many of the hog farms exceeded the safety standards for hydrogen sulfide gas by
as much as 50 times;  
- a North Carolina study found levels of nitrates in groundwater under fields sprayed with liquid manure to be five times the human health standard. Groundwater under some fields measured as high as 13 times;  
- the National Institutes of Health reported in 1998 that 19 people died as a result of hydrogen sulfide emissions from manure lagoons.
5. Brief history of Smithfield

One way that pig farm waste pollutes is through the sprayfield system, which is supposedly meant to fertilize crops. The untreated liquid manure is drawn from the lagoon or basin and sprayed over cropland and pastures using large sprinklers. But often too much of the waste is sprayed, resulting in crop damage and contaminated soil and groundwater. Meanwhile, the pork companies attempt to evade responsibility for the pollution their lagoons cause. They often sign contracts with contractors who own the land and run the facility, whereby the company owns the hogs, and the contractor owns the waste product to be sold as fertilizer, thus permitting the producers to point the finger at the contractors if any pollution results from lagoon leakage or over-spraying.

As the world’s leading hog producer, through reprehensible management and carelessness about the potential dangers of its waste, Smithfield has been a leading polluter. One of its hog farms in North Carolina has polluted the Cape Fear River 40 times. In another case, in 1995, a lagoon run by a Smithfield subsidiary in North Carolina poured over seven million litres of waste into a tributary of the Cape Fear River. In 1996, over three million litres of hog waste from a Smithfield plant spilled into the Trent River in North Carolina. But Smithfield really distinguished itself at its slaughterhouse in Smithfield, Virginia, in 1997. That year, Smithfield and its Gwaltney subsidiary were charged by regulators with sending waste into the Pagan River. They were slapped with the largest U.S. civil penalty ever levied for violating the Clean Water Act, a fine of USD 12.6 million. Overall, the U.S. government found that Smithfield's failure to install decent pollution control equipment and treat its waste resulted in 5,000 violations of the company's permitted limits for phosphorous, fecal coliform and other pollutants over more than five years.

For years Smithfield allowed its dangerous pollution to flow into Virginia's Pagan River, James River and the Chesapeake Bay. The federal judge in the case ruled that Smithfield's violations of the effluent limits were extremely serious. The Environmental Protection Agency had found serious chronic violations of discharge limits for several pollutants, including phosphorous, ammonia, cyanide, oil, grease, and fecal coliform. Sampling of the Pagan River revealed excess fecal coliform levels, an indicator of the presence of intestinal wastes from warm-blooded animals that is often associated with bacteria known to cause serious illness in humans. But that's not all. Smithfield also engaged in a cover-up to avoid detection in Virginia. The federal government determined that Smithfield had falsified documents and destroyed water quality records. Meanwhile, officials in Virginia ordered Smithfield to pay a separate fine of USD 3.8 million for 22,000 pollution law violations. After
its Virginia debacle, Smithfield found itself the target of protests from angry environmentalists, farmers, and citizens over the ecological hazards posed by the company’s lakes of pig waste. Concerns over how pig waste can ruin the environment have all but halted Smithfield’s ability to acquire new hog farms in the United States.

With its name sullied by pollution back home, and many states enacting moratoriums on new large pig farms, Smithfield looked overseas. The company embarked on an aggressive hunt for foreign pork butchers and packers in 1998, which since has evolved into USD 1.3 billion in annual sales. Smithfield bought Societe Bretonne de Salaisons, one of the largest private pork processors in France, in 1998, and a year later bought Animex, a leading meat processor in Poland. It took over Schneider Corp., of Ontario, Canada, in November 1998. The next year the Mexican pork-packing firm, Agroindustrial del Noroeste, agreed to sell 50% and become a partner. Two other Canadian companies fell under its spell in 2001. Smithfield entered a joint venture with a Chinese firm in 2002. In 2004, Smithfield bought a 15 percent stake in Spain-based meat packer Campofrio, and acquired 100% of the British meat firms Norwich Food and Ridpath Pek. The same year, it bought Comtim, a hog complex in western Romania. In Europe, Smithfield’s expansion strategy is wedded to the expanding European Union, which brought in 10 new countries in May 2004, including Poland. Poland’s vast agricultural land may serve as the food bowl of the EU, and Smithfield doesn’t want to miss out on that opportunity. The company began sniffing around Poland back in 1999 when it bought its ownership stake in Animex. Two years later, two businessmen from Poland, representing a company called Prima Foods, started buying out hog farms in northwestern Poland and signing deals with small-scale farmers. Soon, Polish authorities would learn that Smithfield was using Prima as a kind of front company, providing the funds for buying the farms. This cozy relationship permitted Prima to buy the land without violating a Polish law that restricted foreign companies from buying more farmland. With its huge investments in Animex and Prima, Smithfield unfortunately has had its way in Poland. After environmental activists complained about pollution from Smithfield’s pig farms, political backers of Smithfield successfully changed Polish rules governing fertilizer by classifying liquid pig manure as an agricultural product, instead of a waste product.

One of the results of the Smithfield Foods expansion in Poland was a rapid over-production of pork, a situation made worse by the deregulation of the agricultural market. The prices offered for meat were below the costs of production of individual hog-raisers. In 2001 and 2002 street protests shook the country. Main roads were blocked by protesting farmers. As a result, the Polish government organised a so-called intervening purchase of pork and placed surcharges on export (approx.
0,56 Euro per 1 kg of halved pork carcass). Smithfield/Animex was one of the beneficiaries of the governmental intervention. The problem of overproduction of pork had a social and economic impact on individual farmers.

6. Conclusions
We consider that approving a programme to build 100 industrial pig farms should have been based on consultations with a team of independent specialists in a series of sectors. But first of all, this programme's benefits for the Romanian economy should have been analysed, taking into account also environmental and potential social costs. The local communities and administrations don't have the necessary resources in this respect, which means that solving future conflicts related to the impact of pig farms in Romania will reside with the County Councils and eventually the Ministry of Agriculture and the Ministry of Environment.

We hope that communities will defend their right to a clean and healthy environment and that they will receive the support of civil society organisations in the area. Monitoring the implementation of Smithfield projects in Romania will soon reveal their concrete benefits and impact.
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