



**THE EARLIEST ESTIMATES SUGGEST THAT THE TOTAL DIRECT DAMAGE IN POMORSKIE WILL BE APP. PLN 1.5 BILLION**

**OF WHICH**



**DAMAGE TO WOODLANDS APP. PLN 1.250 MILLION**



**DAMAGE TO HOMES APP. PLN 45 MILLION**



**DAMAGE TO FRUITS OF THE FOREST AS A BUSINESS APP. PLN 35 MILLION**



**DAMAGE TO THE POWER SYSTEM APP. PLN 60 MILLION**

**AFTER THE STORM**



**1,769 RESIDENTIAL BUILDINGS HAVE BEEN DAMAGED**



**33 FAMILIES WITHOUT THE ROOF OVER THE HEAD**



**ESTIMATED DAMAGE TO HOMES IS APP. PLN 45 M**



**HARMFUL ASBESTOS**



**INESTIMABLE SUBSTANTIAL DAMAGE TO TOURISM**

**11** The storms have damaged 1,769 residential buildings, of which 46 are destroyed completely or severely and 33 families were forced to leave their homes. The hardest hit rural municipalities include Brusy (800 residential buildings, of which 17 are destroyed completely), Chojnice (340 residential buildings, of which 6 are destroyed completely), Parchowo (154 residential buildings, of which 7 are destroyed severely), Dziemiany (144 residential buildings, of which 7 are destroyed completely), Czersk (74 residential buildings, of which 6 are destroyed completely), Sulęcyno (77 residential buildings), Sierakowice (110 residential buildings, of which 2 are destroyed completely), Studzienice (36 residential buildings), Lipusz (27 residential buildings, of which 1 is destroyed completely). If we assume that the cost to rebuild a house (to how it was including the amenities, etc.) will be about PLN 400,000 on average, the total direct damage to the 46 buildings is about PLN 18.4 m. In addition, because the extent and type of damage differs from building to building, the estimated average costs to improve 1,769 buildings are only rough estimates. With the average cost of repairs at PLN 15,000/building, the total direct damage amounts to app. PLN 26.5 million. In summary, the initial estimated damage to homes may be app. PLN 45 m.

**12** A major problem as far as many homes are concerned is the asbestos roofing. Ripped off and damaged by the strong winds, the roofing poses a risk to public safety. There are pieces of asbestos roofing scattered on farms and in the fields.

**13** The storms in Bory Tucholskie have inflicted substantial damage to tourism, an important source of income for the local communities. Lakeside, riverside and forest holiday homes have been damaged. While some have not been hit, all the bookings had to be cancelled because entry into the forests is not allowed and the Regional Water Management Authority in Gdansk has suspended canoeing on one of Poland's most popular canoe trails - the Brda (from Zapora to Żukowo). The damage suffered by just one of the sport and holiday centres in Mausz Lake area is estimated at app. PLN 800,000.

**14** It will be many weeks before the final figures can be released, especially because damage is still being assessed in homes, farms, businesses and municipal and state bodies. Despite that, the earliest estimates suggest that the total direct damage in Pomorskie will be app. PLN 1.5 billion, of which:

- damage to woodlands - app. PLN 1.250 million,
- damage to homes - app. PLN 45 million,
- damage to fruits of the forest as a business - app. PLN 35 million,
- damage to the power system - app. PLN 60 million.

It is still not clear how severe the damage has been to farming, transport and technical infrastructure or to tourist and leisure infrastructure.

**AFTER THE STORM**

**POMORSKIE**



**AFTER  
BEFORE**

Photos provided by PwC Polska



**HURRICANE WINDS  
WITH SPEEDS  
OF 100 - 150 KM/H**



**5 DECEASED  
50 INJURED**



**DESTROYED  
WOODLANDS  
OF UNESCO  
BIOSPHERE  
RESERVE**



**32,000 HA  
OF DAMAGED  
TREES**



**6.6 MILLION M<sup>3</sup>  
OF TREES WERE  
FELLED**



**250 MILLION  
SEEDLINGS  
NEEDED**



**REMOVING FELLED  
TREES WILL TAKE  
DOZEN MONTHS**



**REPLANTING WILL  
TAKE SEVERAL  
YEARS**

**1** In the night from 11th August to 12th August 2017 a storm system called bow echo moved across the regions of Wielkopolskie, Kujawsko-Pomorskie and Pomorskie forming hurricane winds with speeds of 100 up to 150 km/h. The region of Pomorskie was the hardest hit with the storm causing the greatest devastation to the poviats (counties) of Bytów (rural municipalities of Lipnica, Parchowo and Studzienice), Chojnice (rural municipalities of Brusy, Chojnice and Czersk), Kartuzy (rural municipalities of Sierakowice and Sulęczyno) and Kościerzyna (rural municipalities of Dziemiany, Karsin and Lipusz).

**2** The storms left five people dead and more than 50 injured.

**3** The violent storm hit Poland's biggest woodland, the Tuchola Forest (Polish: Bory Tucholskie), a UNESCO Biosphere Reserve site since 2010, destroying thousands of hectares of woodland, farmland, hundreds of kilometres of power lines and the properties of tens of thousands of the region's population. The direct damage suffered as a result of the storm in Pomorskie can add up to more than PLN 1.5 billion.

**4** In Pomorskie the violent winds have damaged nearly 32,000 ha of trees (more than 4.8% of the region's wooded area) of which 28,500 ha must be replanted. About 6.6 million m<sup>3</sup> of trees were felled, mostly pine, but also spruce, birch and old oak trees. This is more than double the annual planned amount of wood harvested in all of Pomorskie. The estimated value of the trees felled by the storms is around PLN 1.250 million if all of it were to be put to general use (as good quality raw material) in different branches of the timber industry. Unfortunately, as much as 30% of the storm-felled trees can only be used as energy timber, i.e. woodfuel, which means low prices. Both State Forests and private forests have been affected.

**5** Income from sales of the felled timber is only likely to equal the costs of post-cataclysm clearance. Given the difficulty of the work, higher costs are to be expected for harvesting and logging trees. More seeding and planting will be required to make up for the losses which is going to increase the costs even more. It is estimated that more than 250 million seedlings of trees and bushes will have to be produced in Pomorskie. The work will include soil preparation, planting and nursing. Additional expenditure will be required to rebuild or repair damaged roads and other forestry facilities, tourist infrastructure and drainage systems.

**6** The felled trees must be transported out of the forests as soon as possible which according to the State Forests (in Polish: Lasy Państwowe) is within a dozen months or so. New woodland can be planted as the clearance progresses. The earliest planting can begin in the spring of 2018. The hurricane-devastated areas will take the next few years to be planted. This means intensive efforts for forestry services and forestmanagement organisations over the next few years.



**20% OF THE BORY  
TUCHOLSKIE  
NATIONAL PARK  
IS DAMAGED**



**35% OF THE  
REGION'S AREA  
HAVE BANNED  
ENTRY INTO THE  
FORESTS**



**WHERE IN 2016  
SALES OF FRUITS  
OF THE FOREST  
HAD TOTALLED  
PLN 35 MILLION**



**THOUSANDS  
OF HECTARES  
OF CROPS HAVE  
BEEN DAMAGED**



**2,074 FARM  
HOUSES HAVE  
BEEN DESTROYED**



**THE DAMAGE  
TO POWER LINES  
TOTALLED  
PLN 150 M - 200 M**

What it also means is less income in the years to come for local sawmills and forestry companies possibly leading to local problems in the labour market.

**7** Nature has suffered great losses as well. The Bory Tucholskie National Park has been hard hit by the storms with app. 20% of its area damaged (app. 1000 ha) half of which badly. Other designations have not been spared either, including the Tucholski Landscape Park, Wdzydzki Landscape Park, Zaborski Landscape Park, Natura 2000 birds sites (Bory Tucholskie), Natura 2000 habitat sites (Wdzydzkie Lakes, Brda River Outwash Plain, Młosino-Lubnia) and protected landscape sites (Chojnicko-Tucholski, fragment of Bory Tucholskie, Gowidliński, Lipuski) and numerous nature reserves.

**8** Because felled and crushed trees are a danger to public safety and increase the risk of fire, Pomorskie's hardest hit forest districts (about 35% of the region's area and about 45% of the region's woodlands) have banned entry into the forests which for some of them may continue over the next few months. This may mean additional losses to the local communities who rely on forest fruit and mushroom picking for additional income during the summer and autumn. In 2016 across the region sales of fruits of the forest had totalled PLN 35 million. Because the majority of these trading organisations and processing plants are in the cataclysm-affected area (especially Brusy), the local communities stand to lose quite a lot in terms of income. Over the next few years this may increase several times as a result of the time needed for recultivation and regrowth.

**9** The storms have left about 2,500 farms and at least several thousands of hectares of crops damaged. 2,074 farm houses, including livestock buildings and storage have been destroyed or damaged. The devastation includes greenhouses, polytunnels and farming machines and equipment. The damage suffered in farming is still being estimated.

**10** The violent storms and falling trees have broken power lines. According to the Ministry for Energy across the country the damage to power lines totalled between PLN 150 m and PLN 200 m. Many of the medium and low voltage lines must be built from scratch. According to the Gdansk-based Regional Centre for Crisis Management, Energa Operator and Enea Operator have had 1,215 stations and about 200 km of medium and low voltage lines and about 20 km of high voltage lines damaged in Pomorskie; this includes 220 kV Gdańsk-Żydowo, 110 kV Chojnice - Brusy, 110 kV Chojnice Kościerska - Tuchola. With an estimated average cost to repair/rebuild (a very rough estimate) 1 km of aerial power lines (the costs will vary depending on the scope of work and type of line: low, medium, high or highest voltage) will be about PLN 250,000/km of network. The total expenditure to rebuild the lines will add up to at least PLN 55 m. The costs to rebuild the transformer station are separate from this. All in all a rough estimate of the total direct damage to the power system is at least PLN 60 m.

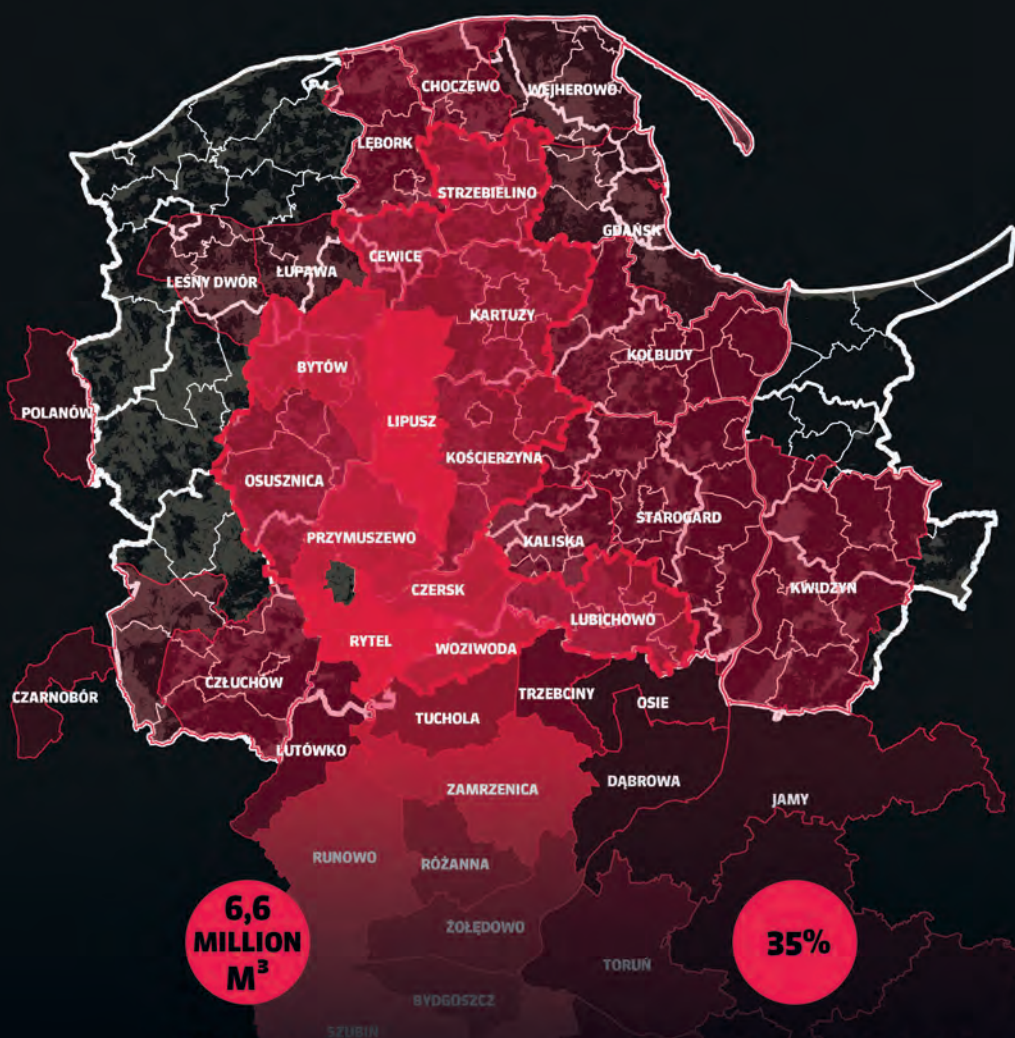


# ESTIMATED DAMAGE TO WOODLANDS



**32,000  
HA**

**OF DAMAGED TREES**



**6,6  
MILLION  
M<sup>3</sup>**

**OF TREES  
WERE FELLED**

**35%**

**OF THE REGION'S AREA  
HAVE BANNED ENTRY INTO  
THE FORESTS**



**POMORSKIE AFTER THE STORM - 11-12.08.2017**





Sources & authors:  
Natalia Kłopotek-Głowczewska  
Gabriela Piotrowska  
and  
<http://www.fakt.pl/wydarzenia/polska/armagedon-tak-wyglada-teraz-najbardziej-zniszczona-wies-w-polsce/9m64jzy>



## ESTIMATED DAMAGE TO HOMES



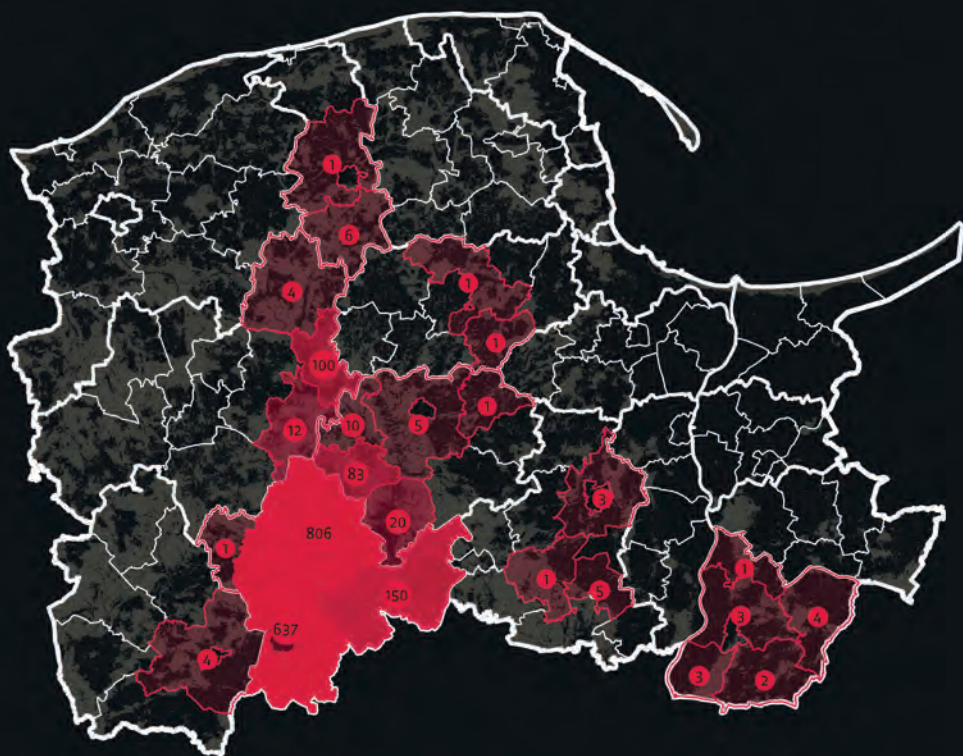
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**RESIDENTIAL  
BUILDINGS HAVE  
BEEN DAMAGED**



33

## FAMILIES WITHOUT THE ROOF OVER THE HEAD



**APP.  
PLN  
45 M**

## ESTIMATED DAMAGE TO HOMES



## POMORSKIE AFTER THE STORM - 11-12.08.2017





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