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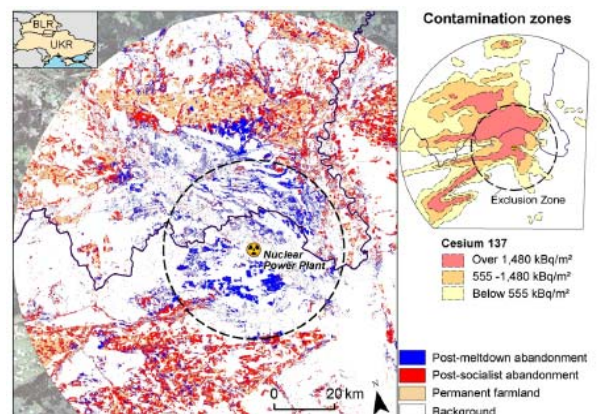
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PRESS RELEASE

The collapse of the USSR caused the same effects as Chernobyl accident regarding land use change

A study conducted by a group of scientists from several universities and research facilities highlights the role of institutions and their changes in shaping land-use and land cover

Halle (Saale), 19 December 2011 – A study recently published in the scientific journal *Environmental Research Letters* concludes that the collapse of the USSR and the Chernobyl nuclear catastrophe affected agricultural land abandonment in a comparably drastic way. Studying the 80 km radius cross-border region of Belarus and Ukraine with the aid of satellite data, the authors contrasted the effects of the Chernobyl nuclear catastrophe in its post-meltdown period (1986-1992) with the effects of transition in post-Soviet Belarus and Ukraine after the collapse of the USSR (1992-1999-2006).



Farmland abandonment and recultivation in the Chernobyl region between 1986 and 2006 (main map) in the Ukrainian-Belarus border region (inset top-left)
Map: Hostert et. al 2011

After the nuclear catastrophe in 1986 the population was evacuated from areas with high Caesium-137 contamination levels. The study found that after the Chernobyl accident in 1986, in the high-level Caesium-137 contamination zone (approximately a 30 km radius around Chernobyl's nuclear reactor) about 67% of the agricultural land was abandoned by 1992, with equal abandonment rates found in Belarus and Ukraine. The rates of abandonment were much lower in the zone where relocation was deemed optional, again with almost equal rates of abandonment in Belarus (24.9%) and Ukraine (23%).

Thus, the collapse of the Soviet Union resulted in higher abandonment rates (36%) than the Chernobyl catastrophe (32%). Agricultural land abandonment rates were especially pronounced



Forest succession on post-Soviet abandoned agricultural fields
Photo: Alexander V. Prishchepov (IAMO)

during the first decade of transition after the collapse of USSR. “We expected to find out that agricultural lands that were affected by radioactive contamination from both sides of the border are not in use anymore, but we were shocked to observe that the rates of abandonment after the collapse of the USSR were equal to, or – in the case of Ukraine – even higher than the abandonment rates resulting from the Chernobyl catastrophe,” comments Alexander Prishchepov, research associate at the Leibniz Institute of Agricultural Development in Central and Eastern

Europe (IAMO), who was involved in the elaboration of the study. He continues, “While the contraction of agricultural lands during the Soviet period also was a known process, the collapse of the USSR triggered non-linear agricultural land abandonment with a much higher magnitude than before the collapse of the USSR.”

The cross-border comparison further highlighted different magnitudes of agricultural land abandonment for post-Soviet Belarus and post-Soviet Ukraine. These countries had a common starting point prior the collapse of the communism, but different transition approaches toward market economies. The abandonment rates of 1992 agriculture outside of relocation zones were almost twice as high in Ukraine (62.5%) by 1999 than those found in post-Soviet Belarus (37.7%). The differences in agricultural land abandonment rates between post-Soviet Belarus and Ukraine further increased by 2006, likely reflecting different land-use policies after the collapse of USSR.

“What this natural experiment exhibited was that the socio-economic disturbance in the case of the collapse of the USSR had different effects on land-use change in two neighbouring countries that were once within the same Union with the same set of land-use policies. The Ukrainian case represents a case of a transition country with weak land-use policy, large withdrawal of the governmental support of agriculture and rural areas, and non-guaranteed markets after the collapse of the USSR. Belarus is an opposite case, where land-use policy didn’t change substantially after the collapse of the USSR, and the government is still playing an important role in support of the agricultural sector and rural areas and keeping unprofitable state and collective farms running. Obviously, Belarus chose a less radical approach of adjustment toward market conditions with strong institutions regarding land-use than its neighbour, Ukraine, however the Belarusian economy can hardly be considered as purely open market one” explains Prishchepov.

The collapse of the USSR and the transition from state-command to market driven economies has resulted in widespread agricultural land abandonment across one sixth of the terrestrial world. More than 45 million hectares of agricultural lands are currently abandoned only in European Russia, the neighbouring country of Belarus and Ukraine, and where the transition approach toward open markets was somewhat similar to the Ukrainian case. Says Prishchepov, “Our study case of Belarus and Ukraine showed how institutional changes and their differences affect land-use change. Such drastic effects on land-use and land-cover due to institutional changes are not uncommon around the

world and have to be accounted for by the governments prior implementation of the policies and institutional changes.”

The study was the result of teamwork by scientists affiliated with the Humboldt University of Berlin, Germany (Dr. Patrick Hostert, Dr. Tobias Kuemmerle, MSc Anika Sieber), IAMO (Dr. Alexander V. Prishchepov), Stanford University, U.S. (Dr. Erick Lambin), and the University of Wisconsin-Madison, U.S. (Dr. Volker C. Radeloff).

Text: 5.032 characters (incl. spaces)

Pictures

www.iamo.de/fileadmin/Presse/Farmland_abandonment_Chernobyl_map_c_Hostert_et_al.jpg – Farmland abandonment and recultivation in the Chernobyl region between 1986 and 2006 in the Ukrainian-Belarus border region (0,7 MB), Map: Hostert et. al 2011

www.iamo.de/fileadmin/Presse/Forest_succession_c_Alexander_V_Prishchepov_IAMO.JPG – Forest succession on post-Soviet abandoned agricultural fields (1.1 MB), Photo: Alexander V. Prishchepov (IAMO)

Further information

http://iopscience.iop.org/1748-9326/6/4/045201/pdf/1748-9326_6_4_045201.pdf – Article “Rapid land use change after socio-economic disturbances: the collapse of the Soviet Union versus Chernobyl” for downloading.

www.iamo.de/en – Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO).

About IAMO

The Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO) is an internationally renowned research institution. With more than 60 scientists and in cooperation with further leading research institutions, it is addressing urgent scientific and social issues in agricultural and food economics and rural areas. Main regions under review include Central and Eastern Europe as well as Central and Eastern Asia. Since its foundation in 1994, IAMO has been part of the Leibniz Association, a German community of independent research institutions.

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