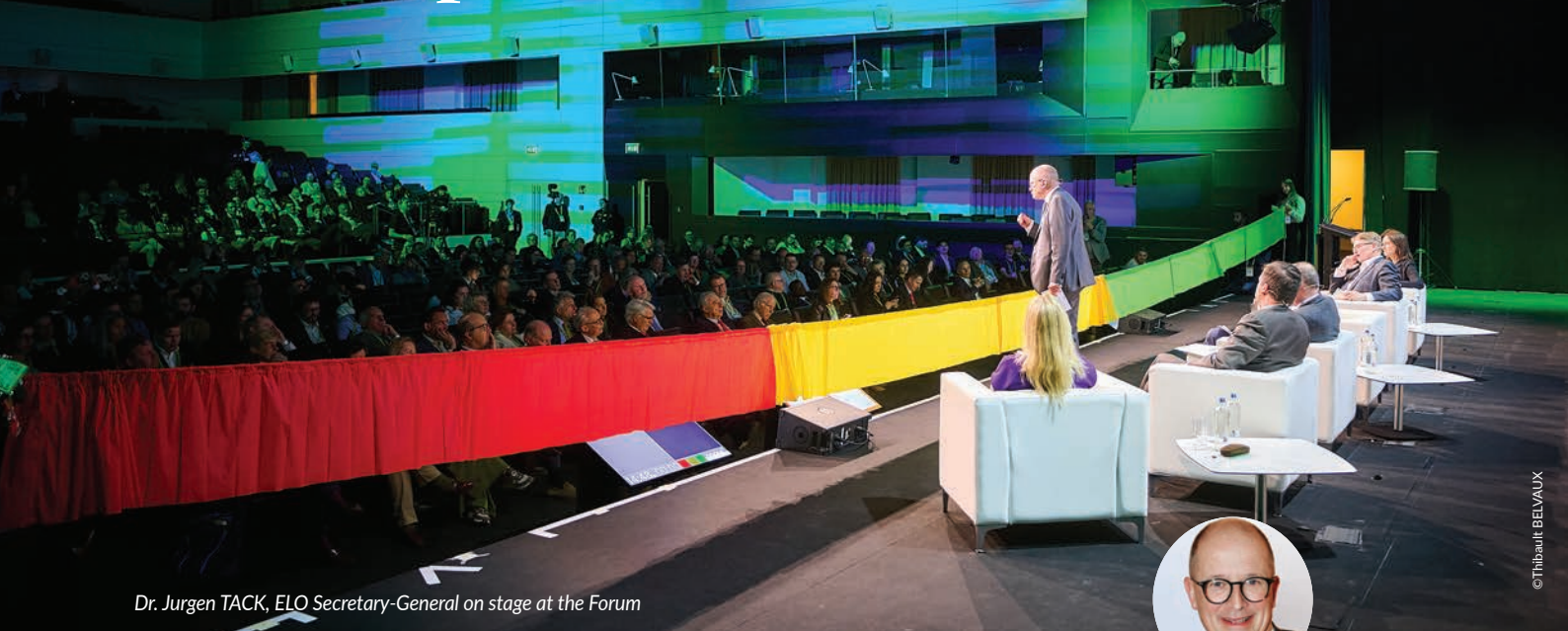


# Two millenia of Land use transformation in Europe



Dr. Jurgen TACK, ELO Secretary-General on stage at the Forum



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Land use in Europe has undergone a profound and non-linear transformation since Roman times, shaped by demography, technology, and policy. In the presentation I delivered during Session 3 (CAP and land use) at the Forum for the Future of Agriculture, I illustrated these changes using a 25-meter rope with movable colored flags representing three categories: nature and forest (green), agriculture (yellow), and urban/industrial areas (red). This simple visual made clear not only the scale of change, but also the structural rebalancing of land functions over time.

In the Roman period (ca. 0–400 AD), Europe remained largely dominated by natural landscapes, with forests and semi-natural ecosystems covering roughly half to two-thirds of the land. Agriculture occupied around 30–45%, concentrated in fertile regions, while urban and industrial land use remained below 5%. Although Roman society already exerted pressure on ecosystems - particularly through deforestation in the Mediterranean - the overall system was constrained by low productivity and limited technological capacity.

The medieval period (ca. 500–1500) saw first a partial recovery of forests following the collapse of Roman structures, and then a major wave of agricultural expansion during the High Middle Ages. By around 1200–1300, agriculture likely covered 40–55%

of Europe. This expansion was driven by population growth and technological improvements such as the heavy plough and crop rotation. The Black Death temporarily reversed this trend, leading to land abandonment and localized reforestation.

During the early modern period (1500–1800), Europe reached a peak in land pressure. Agricultural land expanded to as much as 60% in some regions, while forests declined to their lowest levels. Despite this expansion, productivity remained relatively low, requiring large areas to sustain growing populations. Urban land use was still limited in spatial terms, though increasingly important economically.

The industrial period (1800–1950) marked a turning point. Agricultural land reached its maximum extent - up to 70% in some regions - but this coincided with the beginning of a structural transition. Technological advances such as mechanisation and synthetic fertilisers increased yields, enabling a gradual decoupling of production from land. At the same time, urban and industrial areas expanded rapidly, and forest cover began to recover as marginal lands were abandoned.

In the post-war period (1950–2000), these trends accelerated. Under the Common Agricultural Policy (CAP), agriculture became highly productive and increasingly consolidated. While output continued to grow, the total agricultural area began to decline,

falling to between 40% and 60%. Forests and semi-natural areas expanded again, and urbanisation intensified through infrastructure development and suburban growth. The landscape became more fragmented, even as overall land shares stabilised.

In the contemporary period (2000–present), Europe's land-use distribution has largely stabilised in aggregate terms: agriculture accounts for around 38–42%, forests and semi-natural land for 43–45%, and urban/industrial areas for 5–7% in strict land-cover terms (with a larger functional footprint). The defining feature today is not major shifts in percentages, but increasing competition between land uses - food production, biodiversity, carbon storage, energy, and recreation.

Across two millennia, a clear trajectory emerges: from a predominantly natural landscape, to a peak of agricultural dominance in the 19th century, and finally to a modern system characterised by intensification, urban expansion, and partial ecological recovery. The rope-and-flags illustration captures this well: nature declines and recovers, agriculture expands and contracts, and urban land steadily grows.

The comparison between Roman times and today is particularly striking. The total surface of nature and forest is now broadly comparable to that of the Roman period, following a significant decline during the early modern and industrial eras. At the same

time, urban and industrial areas have expanded structurally, representing a largely irreversible change. Most notably, agricultural land has declined since the introduction of the CAP, even as production has increased.

Looking forward, this trajectory raises a critical challenge. A continued decline in agricultural land combined with improving biodiversity and climate indicators is only feasible through the effective deployment of innovation. This includes New Genomic Techniques (NGTs), advanced biocontrols, feed additives, and progress in regenerative and precision farming systems. These approaches enable higher productivity with lower environmental impact, making it possible to reconcile food production with ecological objectives.

This is all the more important in a context of continued global population growth, which increases demand for food and bio-based resources. Europe's land-use system must therefore deliver more with less land, while contributing to global sustainability goals.

The historical evolution of land use shows that such transitions are possible but only when policy, science, and land management are aligned. The position of the flags on the rope is not fixed. The challenge ahead is to move them intelligently.



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