Safety as Part of the Whole

A rational channel for emotion

Note: The original Dutch paper is an advisory paper on public policy, specifically zoning measures, for addressing third party risk of aviation.

English Summary

- Internal safety of aviation is high and is constantly and actively improved, both in the Netherlands and the international community. Consequently the only remaining local options for reducing third-party risk of aviation are zoning measures and/or reducing of the aviation activity.

- The public debate on safety issues is dominated by emotion. This is also true for aviation. This is understandable. The aviation third party risk, although very small, is nevertheless real.

- Effective policy, however, is built on factual analysis and rational choice. The challenge for a politician is to unite emotion and ratio. This challenge may be met by treating safety as a part of the bigger picture.

- A politician in general will find little support to accomplish this. In the Netherlands safety appears to be an independent objective of public policy instead of a dependent quality of life. No balance is struck or even contemplated between the safety and the benefits of an activity. Because of this the benefits disappeared from view in the public debate. Elsewhere, for instance at the British Health and Safety Executive, elements like benefits of an activity, societal cost of zoning measures mitigating risk and societal cost of restricting an activity are an integral part of the decision-making process.

- Consequently the Dutch concept group risk (GR) is not simply a translation of the international concept Societal Risk. The concept GR is limited to number of people potentially killed in a possible event, and when setting allowable limits, the societal benefits are not part of the equation. As they are with the original concept societal risk.

- This approach allows politicians to drift into making risk avoidance an exclusive issue, both for Individual Risk (IR) and for Group Risk. Not surprisingly IR-policy in the Netherlands turns out to be an order of magnitude more risk averse than in the UK, at least for aviation third party risk, and GR-policy even several orders of magnitude.

- On top of that GR, an issue between politicians and voters, is in the public debate sometimes and mistakenly treated as pertaining to the safety of an individual living near an airport.

- Zoning measures to reduce IR can of course only be effective if it is possible to predict accurately which area may be affected by an event. When prediction is impossible zoning measures cannot by definition be effective.

- Zoning measures should therefore be geared to the predictive power of the model being used. The lesser the predictive power, the more restrained any measure should be. A perfect model will generate a risk contour in the form of a sharply defined line on the map. But the weaker the model, the more diffuse that line will be, reflecting the increased uncertainty.

- Furthermore, with a weak model the diffusion will increase with diminishing risk and increasing distance. In case of aviation and airports it might well be that risk contours of 10^{-6} and lower are in fact so diffuse, especially at some distance from the airport, that they are indistinguishable from a random spread of risk. In that case zoning measures based on risk contours boil down to perception management.

DEGAS advises the Secretary for Infrastructure and Environment to:

1. Differentiate between Individual Risk (IR) and Group Risk (GR) when making policy for third party risk and to stress that IR addresses safety of individuals living near airports, whereas GR addresses safety of society as a whole.

2. Visualize IR, given the limited predictive power and large uncertainties of even the best possible model, by 'translating' individual-risk contours around relevant airports into a simplified Public Safety Zone (PSZ) of limited dimensions.

3. Make information about risk contours outside PSZs available for individuals living near airports, stressing the fact that the predictive power of the model outside the PSZ is so limited that it cannot support any additional policy.

4. Refrain from setting GR-levels for airports because no effective policy can be based on whatever levels are chosen, due to the unavoidably limited predictive power of the model outside the immediate vicinity of the airport combined with the very low level of risk.

5. Restrain the application of the present policy regarding population density around airports as it is in fact a form of GR-based zoning policy.

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