Martin Wall, LFV

TOWARDS A FUTURE DESIGN OF SWEDISH NATIONAL AIRSPACE: A REVIEW OF THE CURRENT AIRSPACE LIMITATIONS.

9 oktober 2019

In depth study regarding the Swedish airspace design

- ✓ Current airspace designed for:
  - Old aircrafts (DC-9, Fokker 28)
  - Noise was all that mattered
  - *LFV had the sole responsibility for the airspace and most of the airports*
- ✓ There is currently little coordination between airspace projects.
- ✓ There is no general plan…

→

- ✓ Government Mandate (N2018/02937/SUBT)
- ✓ **LFV:** An airspace strategy to modernize the Swedish airspace.

MOVEMENTS IN EUROPEAN AIRSPACE

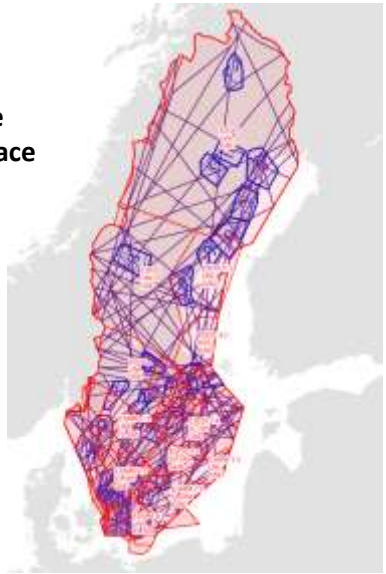
MOVEMENTS IN SWEDISH AIRSPACE – number of movements

- ✓ 1 000 000 movements
- ✓ 710 000 civil
  - ✓ Domestic 20%
  - ✓ International 38%
  - ✓ Overflights 42%

Airspace Infrastructure

Controlled airspace

ATS-routes

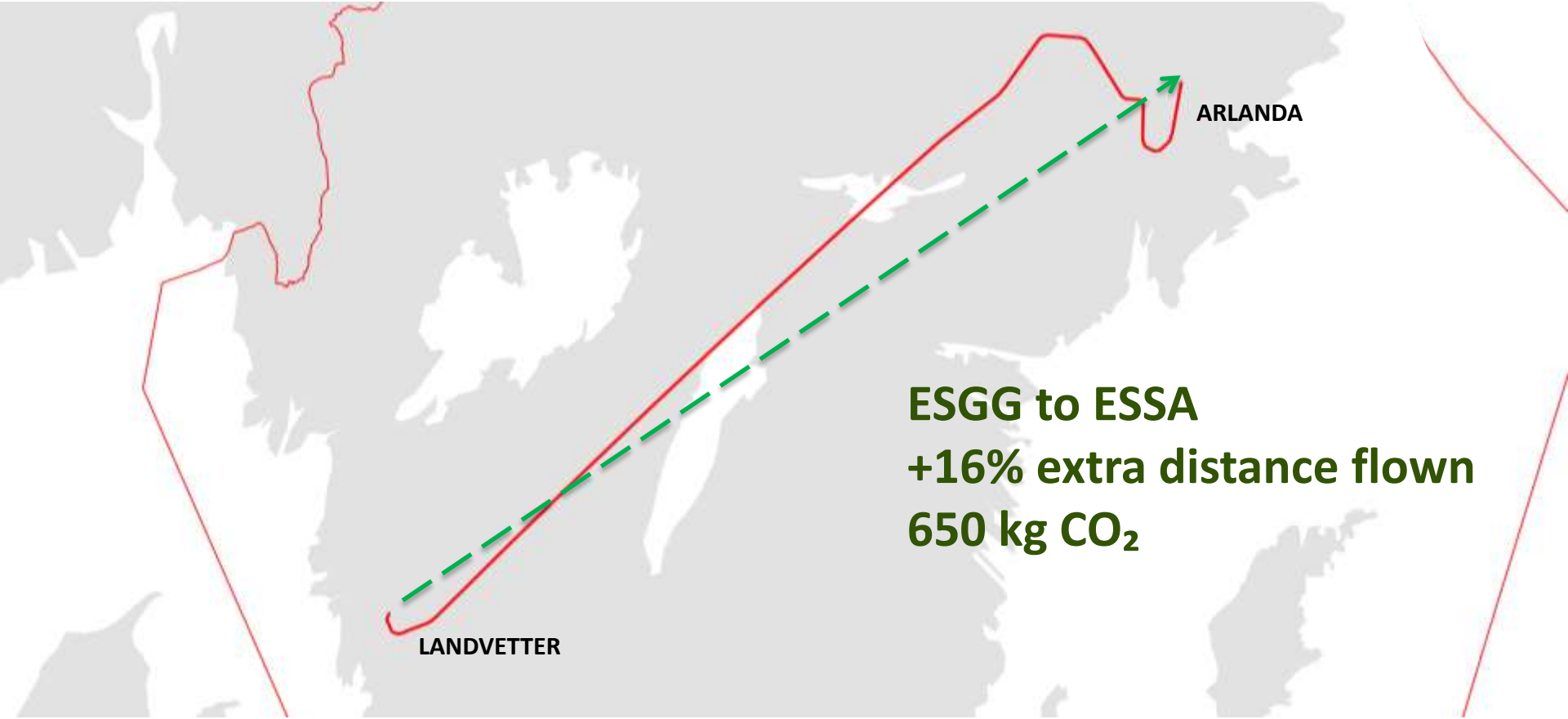


Sectors

Restricted areas
Military training areas

The infrastructure of the air provides the foundation for…

ENVIRONMENT



ESGG to ESSA
+16% extra distance flown
650 kg CO_2

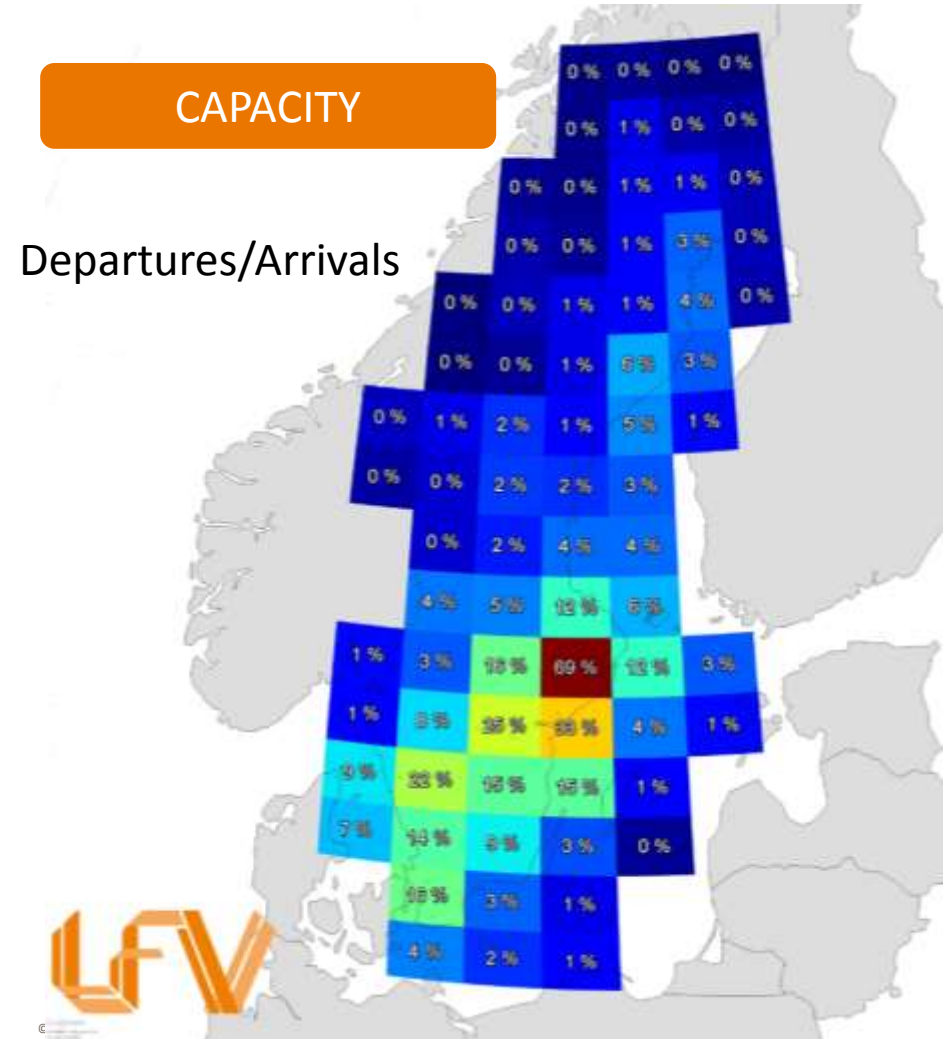
CAPACITY
COST EFFICIENCY
EQUITY

Most flown routes 2018:

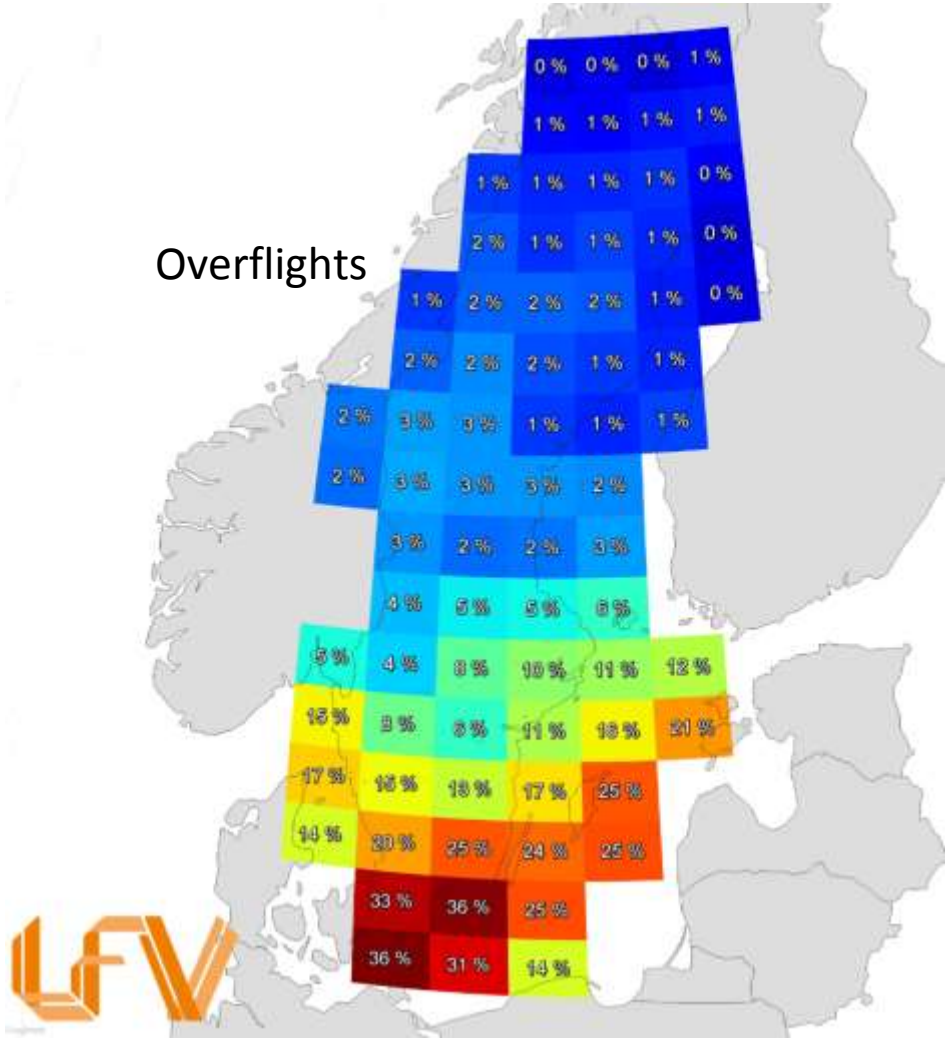
- ✓ Västerås – Västerås
- ✓ Olso – Copenhagen
- ✓ Arlanda – Copenhagen

CAPACITY

Departures/Arrivals

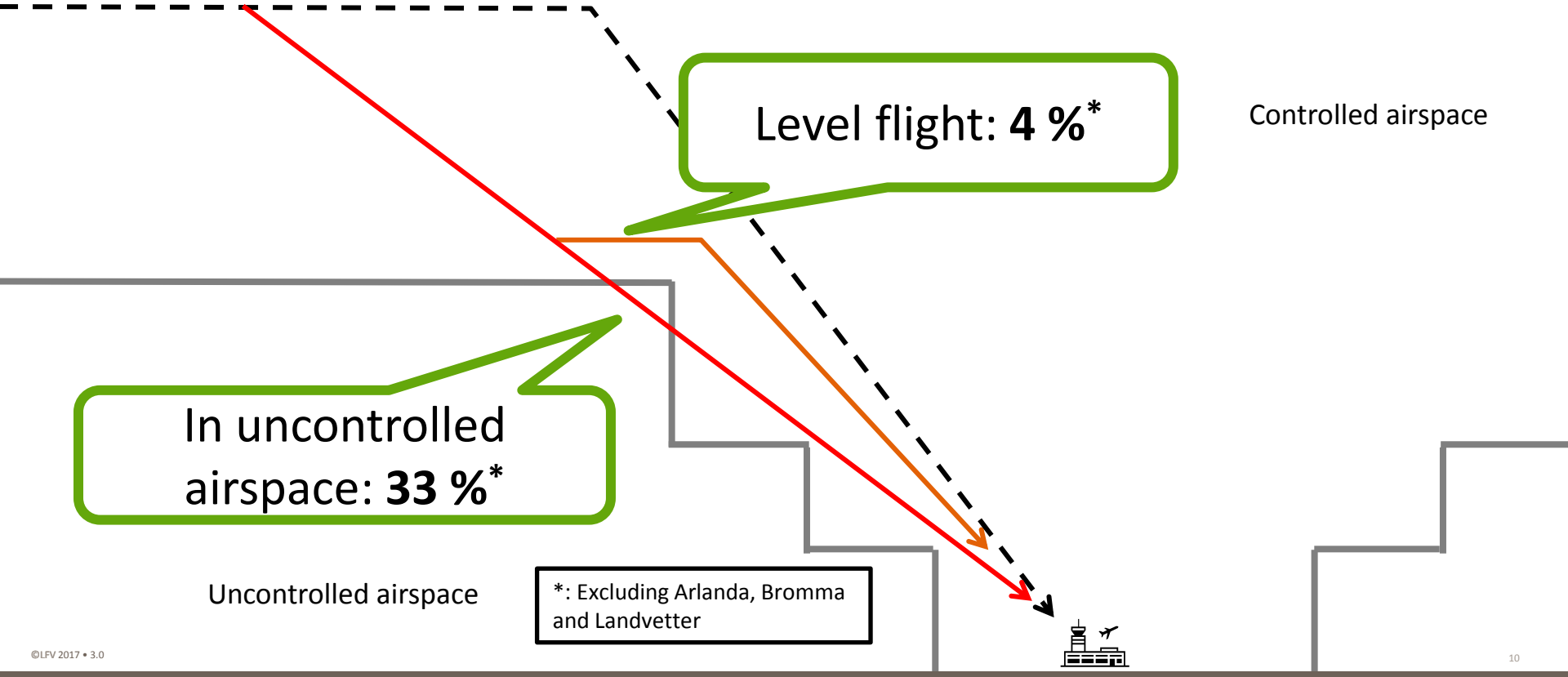


Overflights



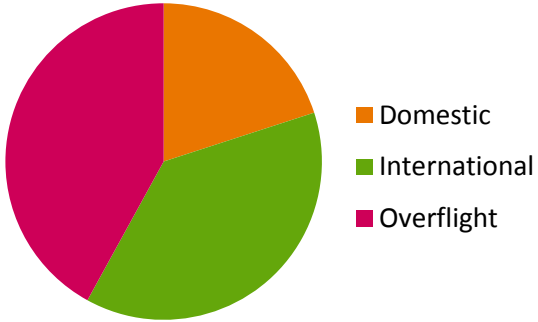
SAFETY ENVIRONMENT

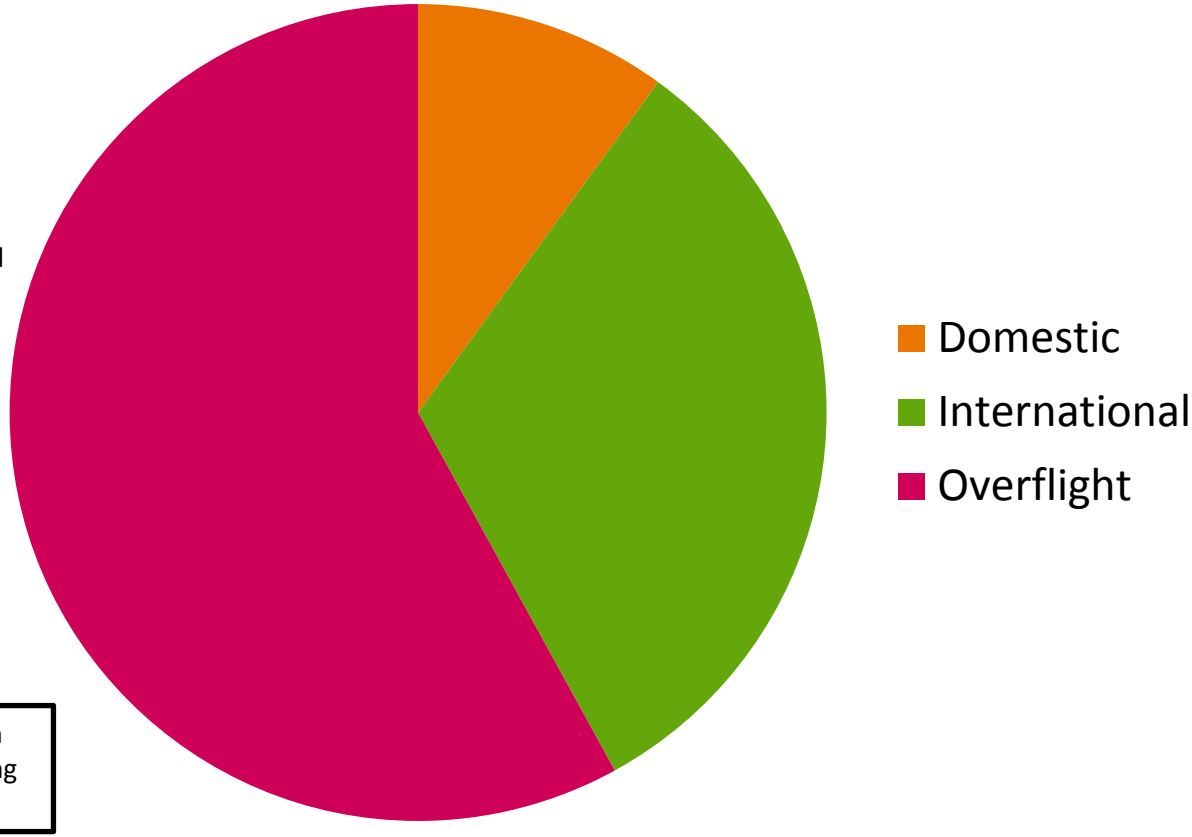
Suboptimal descent profiles



Greenhouse gas emissions* in Swedish Airspace per type of flight

Number of movements per type of flight



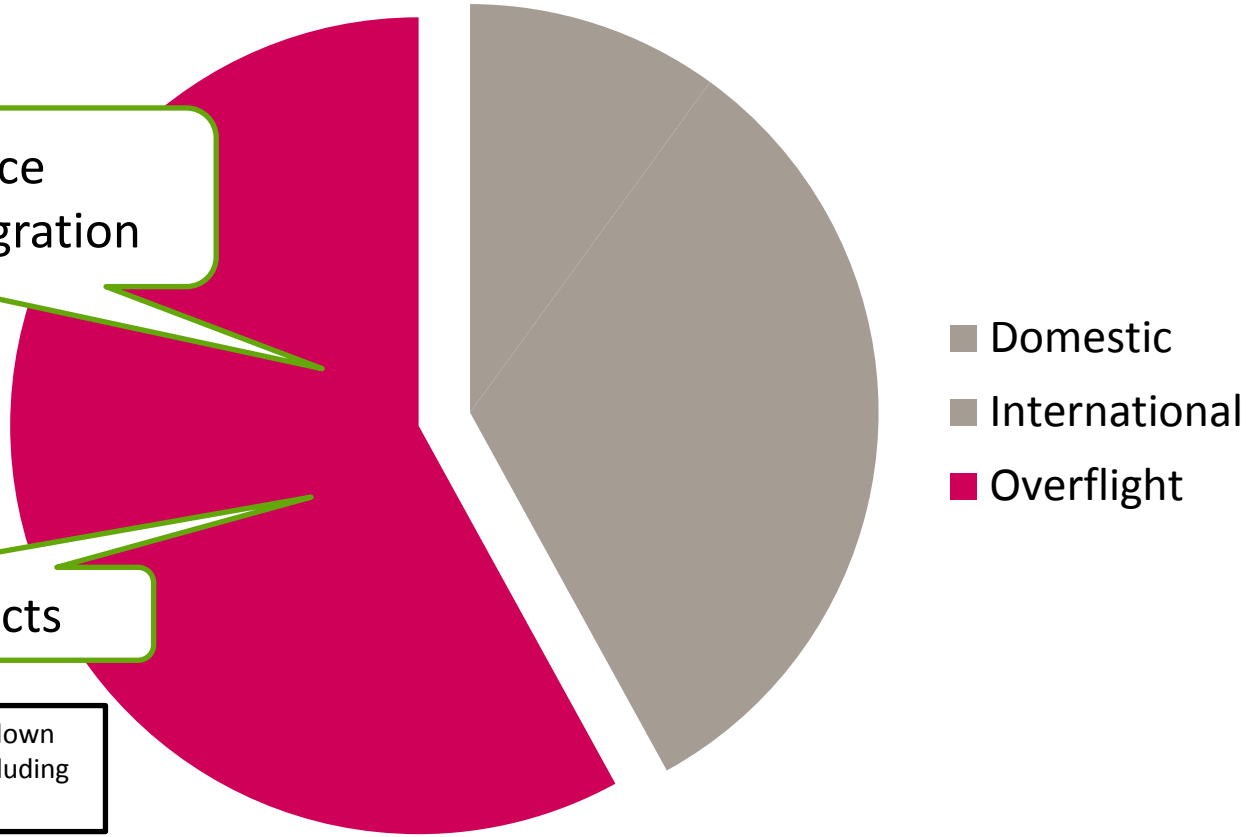


*: A rough estimate based on flown distance and aircraft types. Including high altitude effects.

Greenhouse gas emissions* in Swedish Airspace per type of flight

- Free Route Airspace
- Civil/Military integration

- High altitude effects



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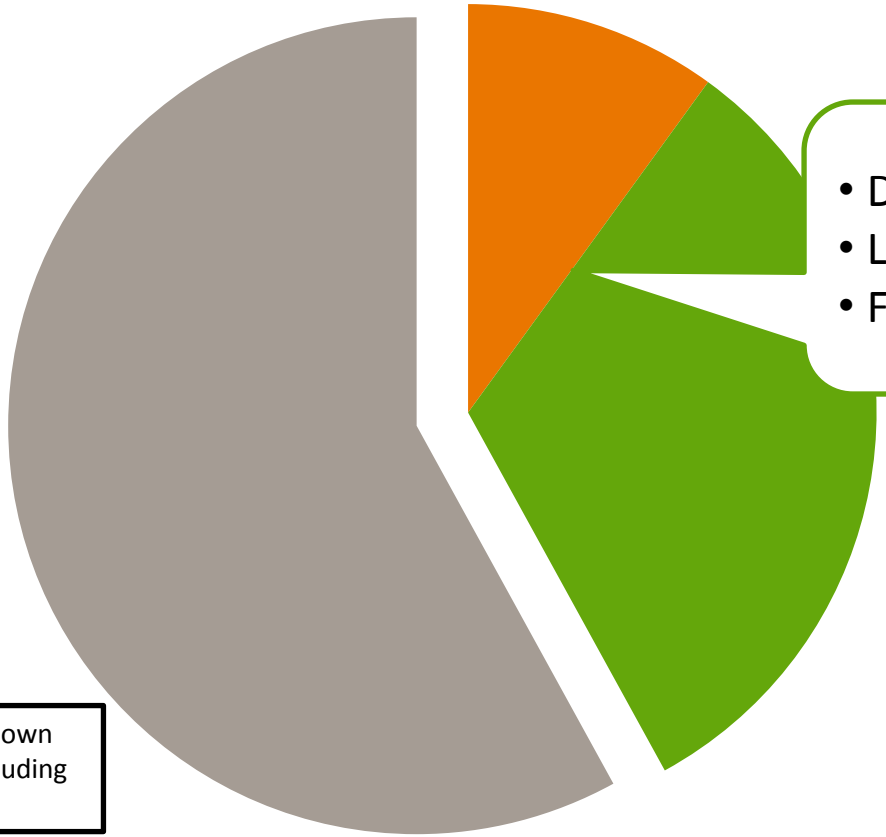
Greenhouse gas emissions* in Swedish Airspace per type of flight



- DEP/ARR Procedures
- Lower Airspace
- Focus on Stockholm TMA

Domestic
International
Overflight

*: A rough estimate based on flown distance and aircraft types. Including high altitude effects.

Unmanned Traffic Management

REGULATION

INFRASTRUCTURE

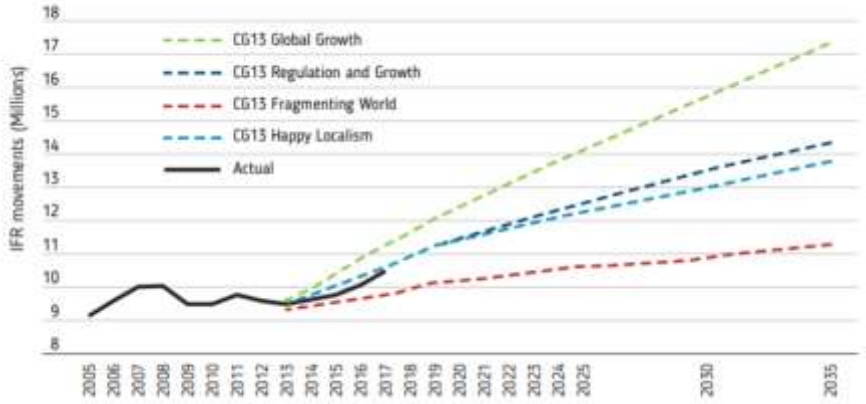
FINANCING

ACCEPTANCE

Legal framework

- ✓ PBN-förordningen (EU) 2018/1048
- ✓ EU-parlamentets och rådets förordning (EU) 2018/1139
- ✓ Kommissionens Genomförandeförordning (EU) 2017/373
- ✓ Luftfartsförordningen 2010:770
- ✓ FUA directive (EU) 2150/2005.
- ✓ TSG 2014-1289
- ✓ TSL 2009-84640
- ✓ TSG 2014-1289
- ✓ TSFS 2018:98
- ✓ NM implementing rule (EU) 2019/123
- ✓ ERNIP Part 1 – European Airspace Design Methodology

Long-term traffic forecasts



"European Aviation in 2040 – Challenges of Growth", Eurocontrol 2018, Annex 1 "Flight Forecast to 2040".

Cooperation with stakeholders

- ✓ **Swedish Armed Forces**
- ✓ **Transport Agency**
- ✓ **Transport Administration**
- ✓ **Defense Materiel Administration**
- ✓ **Swedavia**
- ✓ **Civil Contingencies Agency**

……

- ✓ Transport Agency – Airspace users forum
- ✓ Transport Agency – Airport management forum
- ✓ Saab
- ✓ ACR
- ✓ Swedish regional airports
- ✓ Skavsta airport
- ✓ Swedish Aviation Industry Group
- ✓ General aviation organizations
- ✓ Drone industry group
- ✓ The major airlines
- ✓ Air Line Pilots Association
- ✓ Air Traffic Controllers Association

Opinions

- Positive! Something is finally happening
- Focus on the lower airspace!
- Appoint a sole responsible authority!

Svenska Flygsportförbundet
KSAK
AOPA
SSF

LFV suggests that:

- ✓ Clarify the responsibility
- ✓ Long term development
- ✓ Develop a master plan

- ✓ Lower airspace
  - Should be reviewed and changes implemented
  - UTM services implemented
- ✓ Upper airspace:
  - Modernization of routes to Stockholm
  - A continued joint European development

http://www.lfv.se/globalassets/nyheter/nyheter-2019/d-2019-161405-luftrumsstudie.pdf