

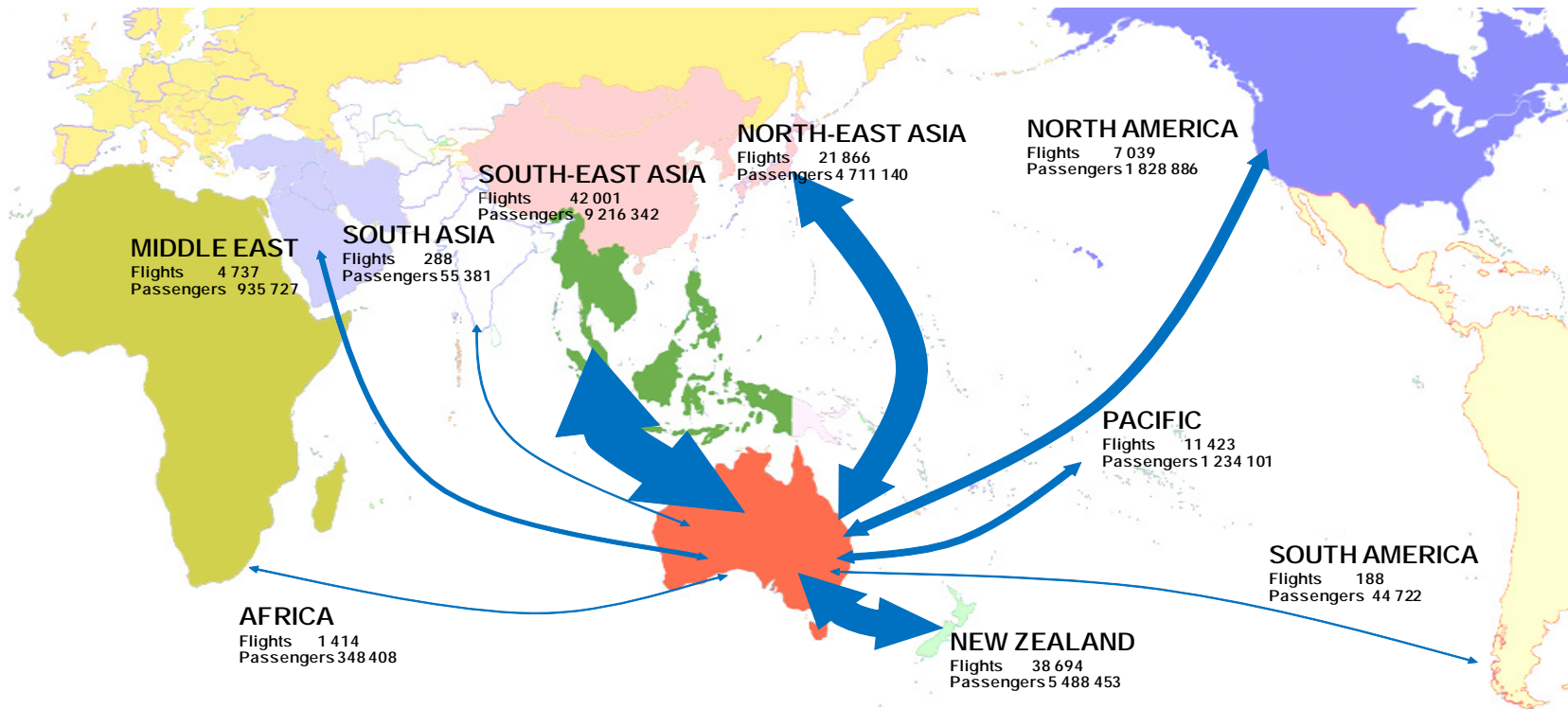


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ICAO: UNITING AVIATION ON CLIMATE CHANGE

ICAO Colloquium on Aviation and Climate Change

Aviation carbon footprinting in Australia



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Evolution of carbon footprinting

- *Community pressure for action*
- *Credibility of industry claims*
- *Lack of disaggregated data*
- *ICAO Carbon Calculator*
- *Sound basis for footprint regime*

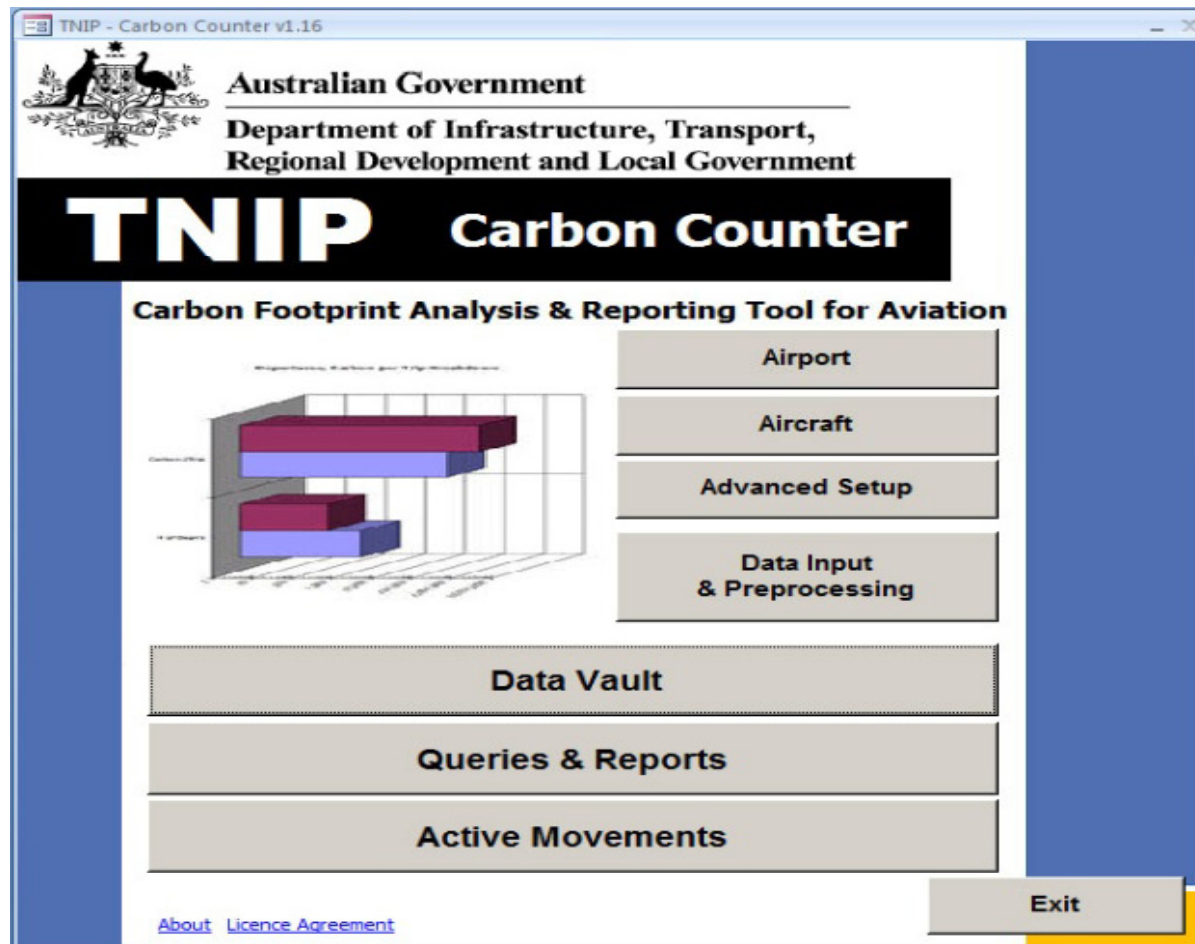


Australia's TNIP Carbon Counter

- *First step in footprinting regime*
- *Factual basis to manage carbon*
- *Built on ICAO Carbon Calculator*
- *Carbon footprints for networks*
- *Disaggregated footprint reports*



Carbon Counter main interface





Computing carbon footprints

- *Aircraft movement data sets*
- *Flight by flight CO₂ using Corinair*
- *Aggregation of single flight data*
- *Comprehensive filtering tools*
- *Graphic and numeric output*



Input data file extract

	A	B	C	D	E	F	G
1	DATE	TIME LOCAL	ORIGIN AIRPORT	DESTINATION AIRPORT	AIRCRAFT TYPE	MTOW	AVTUR
2	1/06/2009	00:08	YPPH	FAJS	A346	365000	Y
3	1/06/2009	00:14	YMML	WSSS	B772	294835	Y
4	1/06/2009	00:17	YMML	VHHH	A333	233000	Y
5	1/06/2009	00:19	YBBN	VTBS	B773	286897	Y
6	1/06/2009	00:22	YPPH	WSSS	A320	71500	Y
7	1/06/2009	00:27	YPPH	VHHH	A333	233000	Y
8	1/06/2009	00:34	YMML	WMKK	B772	286897	Y
9	1/06/2009	00:50	YMML	VHHH	B744	397210	Y
10	1/06/2009	01:03	YBBN	VHHH	A343	276500	Y
11	1/06/2009	01:16	YPPH	WMKK	A333	212000	Y
12	1/06/2009	01:23	YPPH	WSSS	A333	233000	Y



Computing carbon footprints

- *Aircraft movement data sets*
- *Flight by flight CO₂ using Corinair*
- *Aggregation of single flight data*
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Validation

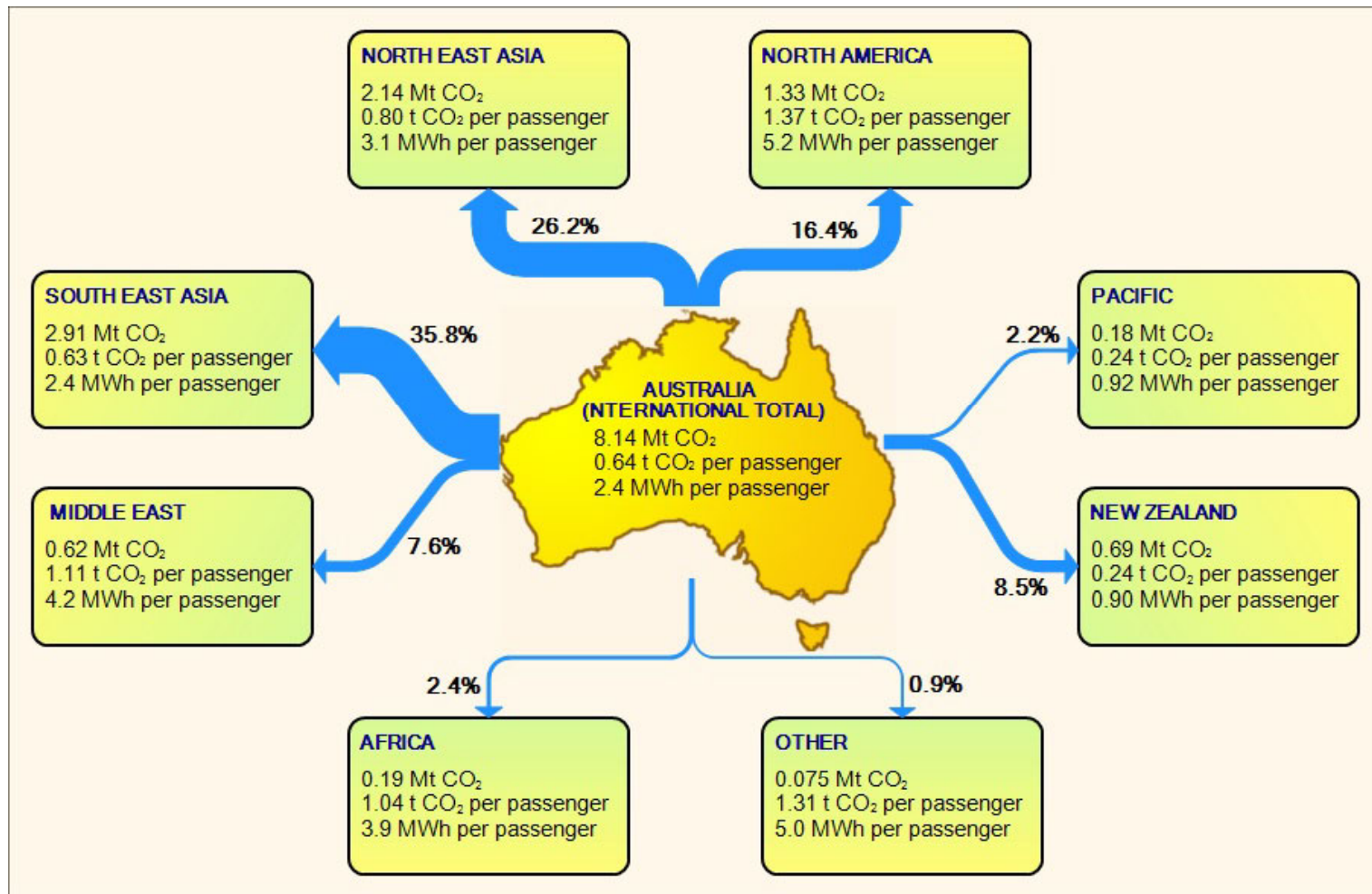
Month	Avtur (megalitres)			Cumulative monthly avtur totals (megalitres)		
	Sales (less 8% military)	TNIP (computed)	Difference (%)	Sales (less 8% military)	TNIP (computed)	Difference (%)
Jul 2008	494.841	476.825	-3.6	494.841	476.825	-3.6
Aug 2008	481.928	467.576	-3.0	976.770	944.402	-3.3
Sep 2008	475.186	452.660	-4.7	1,451.955	1,397.062	-3.8
Oct 2008	481.288	474.593	-1.4	1,933.243	1,871.655	-3.2
Nov 2008	470.908	461.396	-2.0	2,404.151	2,333.050	-3.0
Dec 2008	497.564	481.897	-3.1	2,901.715	2,814.948	-3.0
Jan 2009	478.787	474.407	-0.9	3,380.502	3,289.355	-2.7
Feb 2009	424.707	426.307	0.4	3,805.209	3,715.661	-2.4
Mar 2009	441.433	473.422	7.2	4,246.642	4,189.083	-1.4
Apr 2009	483.608	465.098	-3.8	4,730.250	4,654.181	-1.6
May 2009	469.916	452.957	-3.6	5,200.166	5,107.138	-1.8
Jun 2009	478.899	445.086	-7.1	5,679.064	5,552.225	-2.2



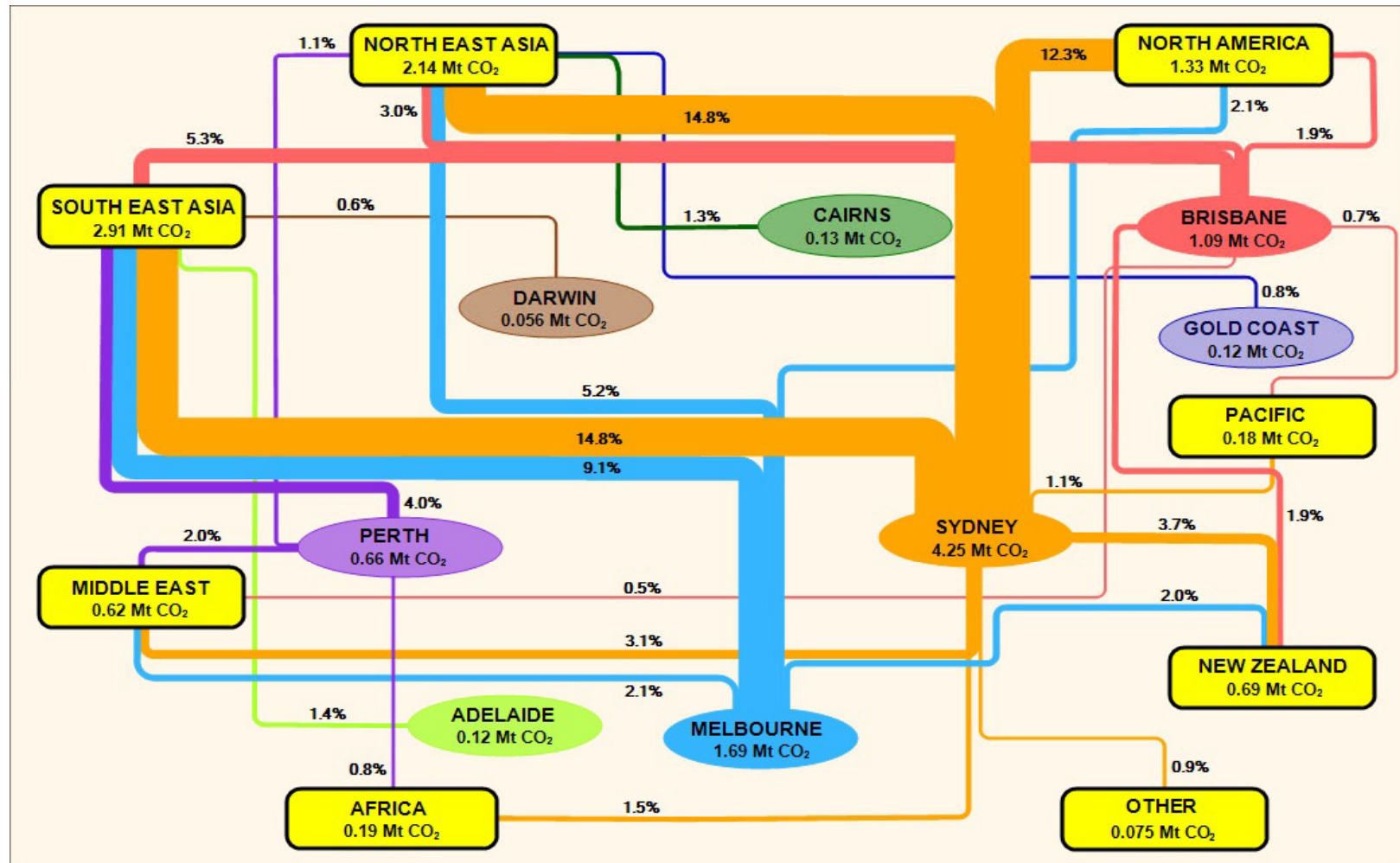
Reporting concepts

- *Trialing reporting formats*
- *Comprehensive & comprehensible*
- *Challenge given amount of data*
- *Needs of different audiences*
- *Layered approach required*

Overview of international operations footprint

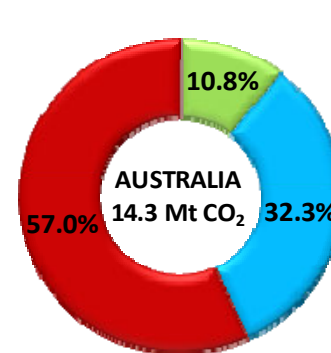
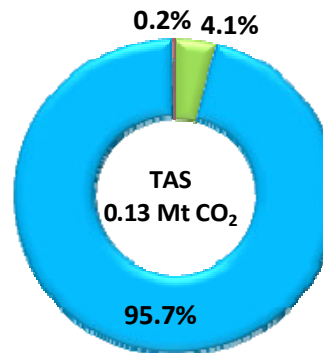
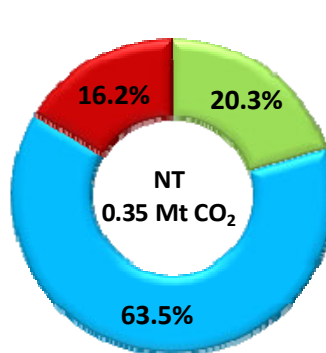
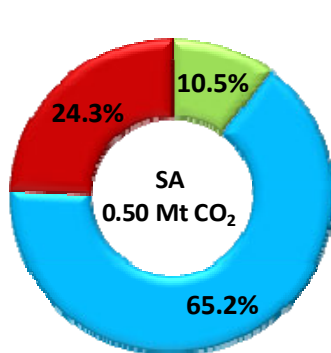
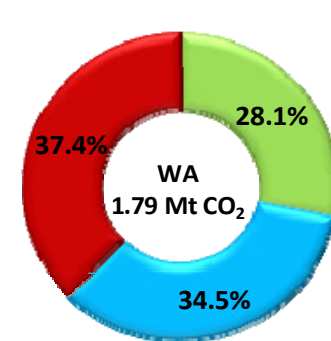
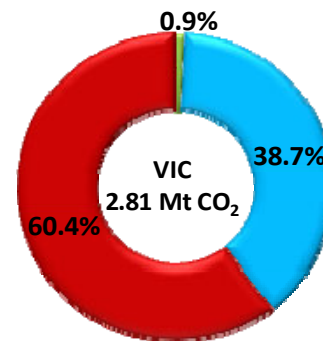
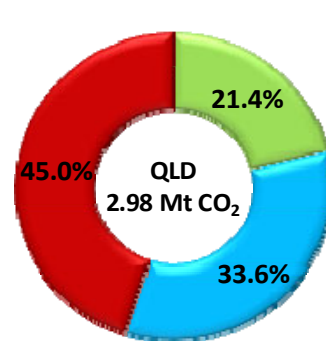
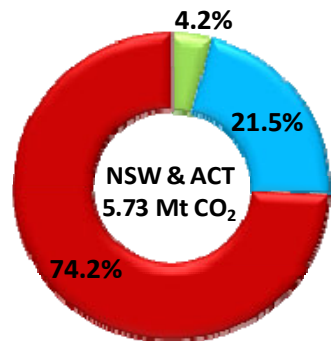


International footprint by origin city



Footprint by Australian States

- Domestic - Intrastate
- Domestic - Interstate
- International

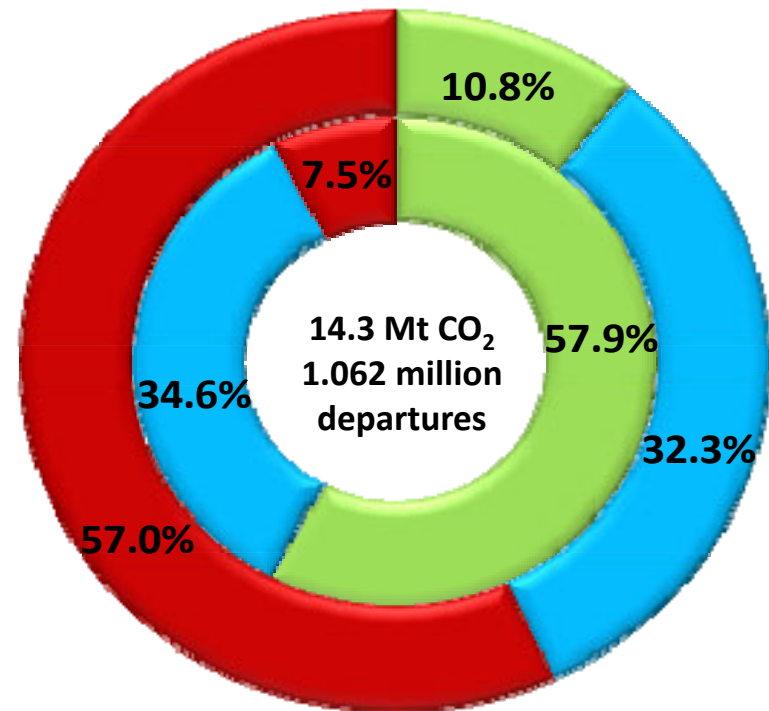


Australian footprint by operation

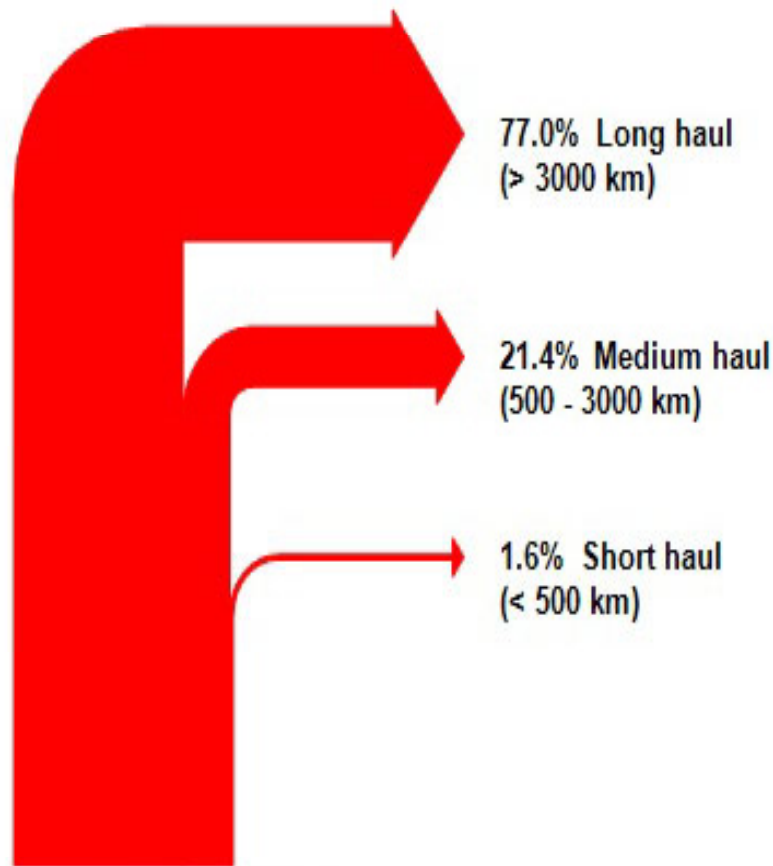
Outer Circle: CO₂ emissions

Inner circle: Aircraft departures

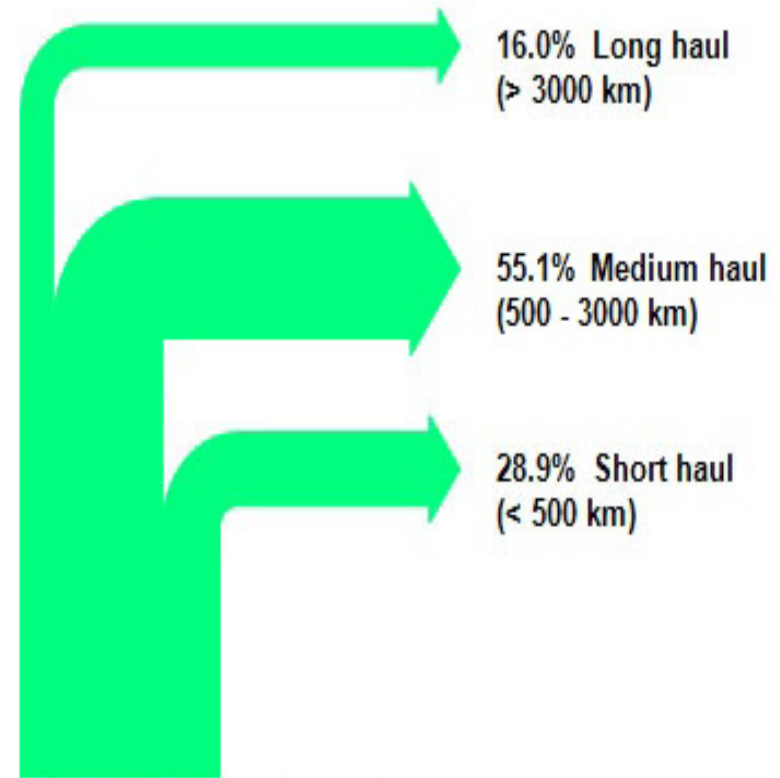
- Domestic - Intrastate
- Domestic - Interstate
- International



Footprint by distance



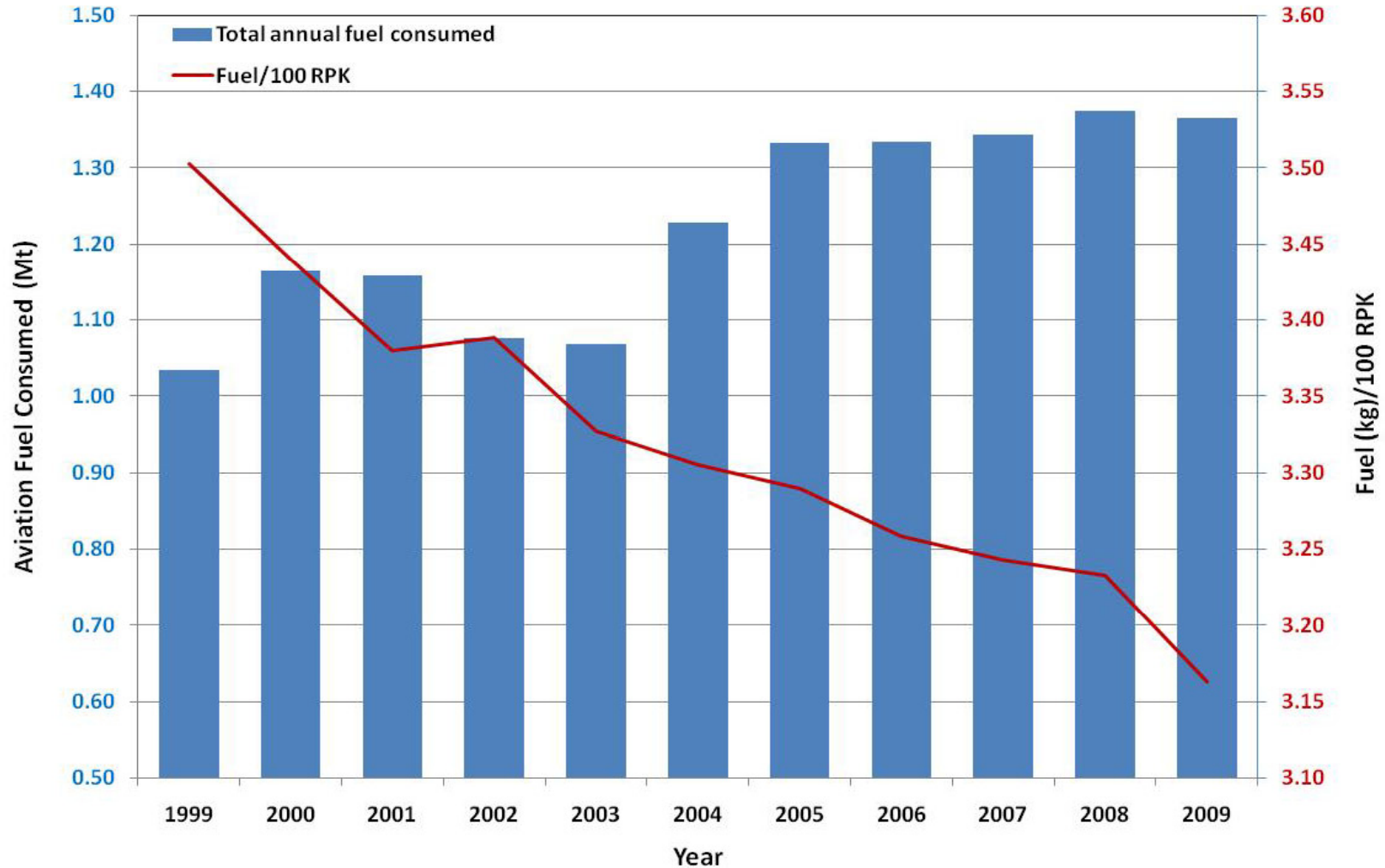
Total CO₂ = 5.40 Mt CO₂



Total departures = 145,478



Fuel efficiency - Sydney





Conclusion

- *ICAO CC useful building block*
- *Great Circle methods robust*
- *Simple approach to footprinting*
 - *readily available datasets*
 - *desktop computers and standard software*



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Thank you



Carbon Footprint