Case studies:
Digitally printed merino wool
Global fibre production share
Global wool production

<table>
<thead>
<tr>
<th>Country</th>
<th>Metric tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>386,768</td>
</tr>
<tr>
<td>Australia</td>
<td>382,300</td>
</tr>
<tr>
<td>New Zealand</td>
<td>165,800</td>
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<tr>
<td>United Kingdom</td>
<td>67,000</td>
</tr>
<tr>
<td>Iran</td>
<td>67,000</td>
</tr>
<tr>
<td>Morocco</td>
<td>55,300</td>
</tr>
<tr>
<td>Sudan</td>
<td>55,000</td>
</tr>
<tr>
<td>Argentina</td>
<td>54,000</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>53,280</td>
</tr>
<tr>
<td>India</td>
<td>43,000</td>
</tr>
<tr>
<td><strong>World total (2009)</strong></td>
<td><strong>2,044,270</strong></td>
</tr>
</tbody>
</table>

Source: [FAO STAT](http://www.fao.org) - United Nations (2012)
The New Zealand wool context

- 3rd largest wool producer
- Majority of wool clip is crossbred suitable for carpets, rugs and interior textiles
- Less than 5% of NZ clip is merino wool, most of which is exported in its greasy state
- Need to add value to NZ wool based products – eg. WRONZ initiatives
Digitally printed wool

• PFDP wool fabric virtually unattainable
  – Not mainstream
  – Processing issues
• Many appear to have tried and failed
• More relevance to NZ – our staple fibre
• Potential to develop niche products
The TDL and digitally printed wool

Early attempts:
Karen Walker – Alpine merino printed sweater
- 3 or 4 garments for New York Fashion Week
- Printed but not steamed
- For catwalk use only
- DO NOT WASH!
The TDL and digitally printed wool
Karen Walker – Alpine merino wool sweater
The TDL and digitally printed wool

Early attempts:
Icebreaker – merino single jersey fabric for prototype all over printed base layer apparel
- Approx 20 metres of fabric
- 8 new designs
- Colour matched to Icebreaker’s Pantone pallet
- Turnaround 1 week!
The TDL and digitally printed wool
Icebreaker – merino base layer apparel
The TDL and digitally printed wool

Getting serious.......  

• 2010 AUTEL funding to develop processes for digitally printed wool  
• Technical support of textile chemist  
• Establish raw material criteria  
• Woven and knitted fabrics
The TDL and digitally printed wool

Issues to overcome

• Excessive dye wash off
• Cross staining of colour
• Surface fibre disturbance
• Wash and rub fastness fastness
The TDL and digitally printed wool

Solutions............

• Whitened and untreated base fabrics
• Formulation of wash off recipes
• Acquisition of commercial washer
• Change in fabric drying method
The TDL and digitally printed wool

Outcomes........

Parisian Neckwear: woven merino wool ties
The TDL and digitally printed wool

Outcomes

Soigneur: knitted merino cycling apparel
The TDL and digitally printed wool

Outcomes........
Bettina Bley – AUT student: knitted merino scarves
The TDL and digitally printed wool

Outcomes........
Ana Diaz – Australian Fashion Designer: merino knitwear
The TDL and digitally printed wool

Outcomes........

AUT Fashion student project in collaboration with The Carpenter’s Daughter: merino single jersey
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Outcomes........

Hannah Pritchett – AUT Textile Design student: woven merino apparel
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Outcomes........

Kylee Davis – NZ Knitwear Designer: merino knitwear
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Outcomes........

TDL – merino single jersey
The TDL and digitally printed wool

Where to now……………

• Discussions with commercial partners
• Potential for tech transfer/tech jumpstart/WRONZ funding
• Commercialisation of processes developed
• Added value for NZ merino wool