Gold-copper discoveries, development, and mine operations were periodic and driven by global economic needs (e.g., metal prices) and a mix of technological innovation (economies of scale, milling, and treatment), socio-cultural, environmental, and geopolitical events.
Gold & Copper producing mines / deposits (1900-2010)

Gold production (1900-2010)

Gold production (tonnes)

Intermediate-sulphidation epithermal deposits
39.27 Moz (1,216 t) Au = 68% of total
SSM = 13.74 Moz (426 t) Au = 24% of total
= 32.7% of ISE total
SSMs shared between 53% to 70% of the annual gold produced during 1998-2010.

High-sulphidation epithermal deposits
2.80 Moz (87 t) Au = 5% of total

Porphyry copper deposits
11.23 Moz (348 t) Au = 20% of total
**Skarn deposits**

3.10 Moz (96 t) Au = 5% of total

**Copper production (1938-2010)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Copper production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1938</td>
<td>737,600</td>
</tr>
<tr>
<td>1940</td>
<td>210,000</td>
</tr>
<tr>
<td>1950</td>
<td>337,000</td>
</tr>
</tbody>
</table>

**Deposit type**

- **HS Epithermal copper**
  - 0.74 Mt Cu = 9.4% of total

- **Porphyry copper**
  - 6.57 Mt Cu = 84% of total

- **Skarn copper**
  - 0.21 Mt Cu = 3% of total

- **VMS copper**
  - 0.34 Mt Cu = 4.3% of total

**VMS deposits**

0.34 Mt Cu = 4.3% of total

**Skarn deposits**

0.21 Mt Cu = 3% of total

**High-sulphidation epithermal deposits**

0.74 Mt Cu = 9.4% of total
Porphyry copper discoveries

Gold discoveries

there is an apparent long-term decline in greenfields discovery rates for higher-grade primary gold resources

the quality (grade and tonnage) of new bulk-mineable copper (with gold credits) discoveries over time did not diminish

Most recent significant discoveries were made in brownfields

fewer outcropping “easy-to-find” deposits are now left except in high-risk and “inaccessible” areas
The rate of discoveries obviously went high during the copper and gold boom periods, but an increasing proportion of these discoveries stayed "in-the-ground", due mainly to the quality, grade, and economic mineability of these deposits, along with a swelling complexity of regulatory procedures and other local and national issues.

<table>
<thead>
<tr>
<th>Deposit Type</th>
<th>Deposits</th>
<th>Mined</th>
<th>Prospects</th>
<th>Drilled Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Porphyry copper</td>
<td>49</td>
<td>16</td>
<td>172</td>
<td>38</td>
</tr>
<tr>
<td>Epithermal HS</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Epithermal IS</td>
<td>51</td>
<td>37</td>
<td>73</td>
<td>24</td>
</tr>
<tr>
<td>Mesothermal</td>
<td>1</td>
<td>1</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>Alkaline</td>
<td>3</td>
<td>1</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Skarn/Sed-hosted</td>
<td>4</td>
<td>4</td>
<td>29</td>
<td>7</td>
</tr>
<tr>
<td>VMS</td>
<td>12</td>
<td>9</td>
<td>14</td>
<td>4</td>
</tr>
</tbody>
</table>

Interest in exploring the remaining highly endowed areas may have negatively changed over the past decade.

The Philippines – lagging behind in global exploration investment, despite ranking high in terms of mineral endowment and geological prospectivity.

Current mining operations will encounter increasing real costs (labor, materials, energy, environmental, community impact) that will affect production.

The next generation of lower-grade copper/gold projects require significantly higher metal prices to justify development.

We need to discover high-quality or better gold/copper resources, even deeper ones that can be economically mined – e.g. in greenfields and brownfields.
Driven by global economic needs (e.g., metal prices) and a mix of technological innovation (economies of scale, milling, and treatment), socio-cultural, environmental, and geopolitical events, gold-copper discoveries, development, and mine operations were periodic.