To estimate the **Potential Peak Sales** for belzutifan (Welireg) in the indication of von Hippel-Lindau (VHL) disease-associated tumors (renal cell carcinoma, CNS hemangioblastomas, and pancreatic neuroendocrine tumors) in the US, EU5 (France, Germany, Italy, Spain, UK), China, and Japan, as well as the **$ value of a 1% share of treated patients** in these geographies, we need to follow a structured approach. Since specific data on patient populations, pricing, and market penetration may not be fully available, I will outline the methodology and make reasonable assumptions based on available information and industry standards.

Step 1: Define the Target Patient Population

Von Hippel-Lindau (VHL) disease is a rare genetic disorder with an estimated prevalence of **1 in 36,000 to 1 in 53,000 people** worldwide. Patients with VHL disease often develop multiple tumors, including renal cell carcinoma (RCC), CNS hemangioblastomas, and pancreatic neuroendocrine tumors (pNET). Belzutifan is approved for adult patients with VHL disease who require therapy for these associated tumors and do not need immediate surgery.

- **Prevalence and Incidence**: Using a prevalence of 1 in 36,000, we can estimate the total number of VHL patients in each geography based on population size.

- **Eligible Patients**: Not all VHL patients will require therapy for associated tumors at any given time. Literature suggests that ~60-70% of VHL patients develop RCC, ~60-80% develop CNS hemangioblastomas, and ~10-17% develop pNET over their lifetime. For simplicity, let's assume that **50% of VHL patients** are eligible for treatment with belzutifan at some point (accounting for overlap of conditions and those not requiring immediate surgery).

Population Estimates (2023 data, approximate):

- **US**: 330 million → VHL patients = 330M / 36,000 ≈ 9,167 → Eligible patients (50%) ≈ 4,583

- **EU5**: 260 million → VHL patients = 260M / 36,000 ≈ 7,222 → Eligible patients (50%) ≈ 3,611

- **China**: 1,410 million → VHL patients = 1,410M / 36,000 ≈ 39,167 → Eligible patients (50%) ≈ 19,583

- **Japan**: 125 million → VHL patients = 125M / 36,000 ≈ 3,472 → Eligible patients (50%) ≈ 1,736

- **Total Eligible Patients Across Geographies**: ~29,513

Step 2: Estimate Market Penetration (Treated Patients)

The problem assumes a **20% to 30% share of treated patients** for belzutifan. This likely refers to the proportion of eligible patients who receive belzutifan as their treatment. For peak sales estimation, we will use the midpoint of this range, i.e., **25% market share**.

- **US Treated Patients**: 4,583 * 25% ≈ 1,146

- **EU5 Treated Patients**: 3,611 * 25% ≈ 903

- **China Treated Patients**: 19,583 * 25% ≈ 4,896

- **Japan Treated Patients**: 1,736 * 25% ≈ 434

- **Total Treated Patients**: ~7,379

Step 3: Estimate Annual Cost of Treatment

Belzutifan (Welireg) is a novel targeted therapy, and pricing for such drugs in rare diseases is typically high. Based on reports and industry benchmarks for rare disease drugs:

- **US Annual Cost**: ~$200,000 per patient per year (common for orphan drugs in oncology).

- **EU5 Annual Cost**: ~$150,000 per patient per year (lower due to price negotiations and healthcare systems).

- **Japan Annual Cost**: ~$150,000 per patient per year (similar to EU5).

- **China Annual Cost**: ~$50,000 per patient per year (significantly lower due to pricing pressures and market access challenges).

Step 4: Calculate Potential Peak Sales

Peak sales are calculated as the number of treated patients multiplied by the annual cost per patient in each geography.

- **US Peak Sales**: 1,146 patients * $200,000 = **$229.2 million**

- **EU5 Peak Sales**: 903 patients * $150,000 = **$135.5 million**

- **China Peak Sales**: 4,896 patients * $50,000 = **$244.8 million**

- **Japan Peak Sales**: 434 patients * $150,000 = **$65.1 million**

- **Total Peak Sales**: $229.2M + $135.5M + $244.8M + $65.1M = **$674.6 million**

Thus, the **Potential Peak Sales for belzutifan** in the specified indication across the US, EU5, China, and Japan is approximately **$675 million** annually, assuming a 25% market share.

Step 5: Calculate $ Value of 1% Share of Treated Patients

A 1% share of treated patients refers to 1% of the eligible patient population being treated with belzutifan. We calculate the number of patients and associated revenue based on the eligible patient pool.

- **US (1% of 4,583)**: 45.83 patients * $200,000 = **$9.17 million**

- **EU5 (1% of 3,611)**: 36.11 patients * $150,000 = **$5.42 million**

- **China (1% of 19,583)**: 195.83 patients * $50,000 = **$9.79 million**

- **Japan (1% of 1,736)**: 17.36 patients * $150,000 = **$2.60 million**

- **Total $ Value of 1% Share**: $9.17M + $5.42M + $9.79M + $2.60M = **$26.98 million**

Thus, the **$ value of a 1% share of treated patients** across the US, EU5, China, and Japan is approximately **$27 million**.

Final Answer:

- **Potential Peak Sales for belzutifan** (at 25% market share): **$675 million** annually

- **$ Value of 1% Share of Treated Patients**: **$27 million** annually

Notes and Assumptions:

1. Prevalence and eligibility rates are based on general estimates for VHL disease and may vary by region.

2. Pricing assumptions are indicative and based on typical costs for rare disease drugs; actual pricing for belzutifan may differ.

3. Market penetration (25%) is the midpoint of the provided range (20-30%) and assumes no major competitors or access barriers at peak sales.

4. Peak sales are assumed to be annual figures at the height of market penetration, typically 5-10 years post-launch.

5. No adjustments are made for inflation, discounting, or changes in healthcare policies.

If more specific data on pricing, patient numbers, or market dynamics is available, these estimates can be refined further.