To estimate the **Potential Peak Sales** for lorlatinib (Lorbrena) in the indication of metastatic non-small cell lung cancer (NSCLC) with ALK-positive 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 based on available data and reasonable assumptions. Since exact figures for treated patients, pricing, and market penetration may not be publicly available, I will outline the methodology and provide illustrative calculations using estimates grounded in industry trends and publicly accessible data as of 2023.

Lorlatinib is a third-generation ALK inhibitor used for ALK-positive metastatic NSCLC, a niche but high-value indication due to the targeted nature of the therapy and the severity of the disease. Let's break this down step by step.

Step 1: Define Key Parameters

1. **Target Patient Population**: Estimate the number of ALK-positive metastatic NSCLC patients in each geography. ALK-positive NSCLC accounts for approximately 3-5% of all NSCLC cases. NSCLC itself represents about 85% of all lung cancer cases.

2. **Incidence and Prevalence**: Use cancer incidence data to estimate the eligible patient pool.

3. **Treatment Rate**: Assume that not all diagnosed patients receive targeted therapy due to access, cost, or other factors.

4. **Market Share**: Assume a 20-30% market share for lorlatinib among treated ALK-positive NSCLC patients, as given in the query.

5. **Drug Pricing**: Estimate the annual cost of lorlatinib per patient. Pricing varies by region due to healthcare systems and negotiations.

6. **Peak Sales**: Calculate peak sales at the point of maximum market penetration (typically 5-10 years post-launch, depending on competition and patent life).

Step 2: Estimate ALK-Positive NSCLC Patient Population

Lung cancer incidence data (from sources like GLOBOCAN, WHO, or national cancer registries) can be used to estimate the number of NSCLC cases. Below are approximate annual incidence figures for lung cancer in 2023, adjusted for NSCLC (85%) and ALK-positive cases (4% average):

- **US**: ~238,000 new lung cancer cases → ~202,300 NSCLC → ~8,100 ALK-positive.

- **EU5**: ~320,000 new lung cancer cases → ~272,000 NSCLC → ~10,900 ALK-positive.

- **China**: ~815,000 new lung cancer cases → ~693,000 NSCLC → ~27,700 ALK-positive.

- **Japan**: ~125,000 new lung cancer cases → ~106,000 NSCLC → ~4,200 ALK-positive.

Since metastatic NSCLC (Stage IV) accounts for ~40-50% of NSCLC cases at diagnosis, and considering prevalent cases (patients living with the disease), we can adjust the eligible patient pool for treatment as follows (assuming a mix of incident and prevalent cases over a 2-3 year treatment

duration):

- **US**: ~10,000-12,000 eligible patients.
- **EU5**: ~13,000-15,000 eligible patients.
- **China**: ~30,000-35,000 eligible patients.
- **Japan**: ~5,000-6,000 eligible patients.

Step 3: Estimate Treated Patients

Not all eligible patients receive targeted therapies due to access barriers, late diagnosis, or alternative treatments (e.g., other ALK inhibitors like alectinib or crizotinib). Assuming a treatment rate of 60-80% in developed markets (US, EU5, Japan) and 30-50% in China:

- **US**: ~7,000-9,000 treated patients.
- **EU5**: ~8,000-10,000 treated patients.
- **China**: ~10,000-15,000 treated patients.
- **Japan**: ~3,500-4,500 treated patients.

Total treated patients across geographies: ~28,500-38,500.

Step 4: Estimate Lorlatinib Market Share (20-30%)

Given the query's assumption of a 20-30% share of treated patients:

- **US**: 1,400-2,700 patients.
- **EU5**: 1,600-3,000 patients.
- **China**: 2,000-4,500 patients.
- **Japan**: 700-1,350 patients.

Total lorlatinib-treated patients: 5,700-11,550.

Step 5: Estimate Annual Drug Cost per Patient

Lorlatinib pricing varies by region due to differences in healthcare systems and negotiations:

- **US**: ~$250,000-$300,000 per year (based on list prices for similar targeted therapies).
- **EU5**: ~$150,000-$200,000 per year (discounted due to payer negotiations).

- **China**: ~$50,000-$80,000 per year (lower due to pricing controls and generics competition).

- **Japan**: ~$180,000-$220,000 per year (similar to EU5 but with unique pricing mechanisms).

Using mid-point estimates for simplicity:

- US: $275,000

- EU5: $175,000

- China: $65,000

- Japan: $200,000

Step 6: Calculate Potential Peak Sales

Peak sales are calculated as (number of patients treated with lorlatinib) × (annual cost per patient). Using the mid-point of the 20-30% market share range (25%):

- **US**: 2,000 patients × $275,000 = $550 million.

- **EU5**: 2,250 patients × $175,000 = $394 million.

- **China**: 3,125 patients × $65,000 = $203 million.

- **Japan**: 1,000 patients × $200,000 = $200 million.

Total Potential Peak Sales: $550M + $394M + $203M + $200M = **~$1.35 billion annually**.

- At 20% market share: ~$1.08 billion.

- At 30% market share: ~$1.62 billion.

Thus, **Potential Peak Sales Range**: **$1.1 billion to $1.6 billion annually**.

Step 7: Calculate $ Value of 1% Share of Treated Patients

Using the total treated patient estimates from Step 3 (mid-point) and the per-patient cost from Step 5:

- **US**: 8,000 treated patients × 1% = 80 patients × $275,000 = $22 million.

- **EU5**: 9,000 treated patients × 1% = 90 patients × $175,000 = $15.75 million.

- **China**: 12,500 treated patients × 1% = 125 patients × $65,000 = $8.13 million.

- **Japan**: 4,000 treated patients × 1% = 40 patients × $200,000 = $8 million.

Total $ Value of 1% Share: $22M + $15.75M + $8.13M + $8M = **~$53.9 million**.

Final Answer

1. **Potential Peak Sales for Lorlatinib** in ALK-positive metastatic NSCLC (assuming 20-30% market share):

- **Range**: $1.1 billion to $1.6 billion annually across the US, EU5, China, and Japan.

- **Mid-point (25% share)**: ~$1.35 billion annually.

2. **$ Value of 1% Share of Treated Patients**:

- **Total**: ~$53.9 million annually across the US, EU5, China, and Japan.

Note: These estimates are based on assumptions and publicly available data as of 2023. Actual figures may vary due to changes in pricing, market dynamics, competition (e.g., other ALK inhibitors), patient access, and patent exclusivity. For precise figures, primary market research or financial reports from Pfizer would be required. Additionally, lorlatinib's sales may be influenced by its use in first-line vs. second-line settings and emerging therapies.