<!doctype html>

<html lang="en">

<head>

<meta charset="utf-8" />

<meta name="viewport" content="width=device-width,initial-scale=1" />

<title>GeoVision — LULC Dashboard (2015–2025)</title>

<!-- Tailwind (utility CSS) -->

<script src="https://cdn.tailwindcss.com"></script>

<!-- Leaflet for Pakistan overview -->

<link rel="stylesheet" href="https://unpkg.com/leaflet@1.9.4/dist/leaflet.css"/>

<script src="https://unpkg.com/leaflet@1.9.4/dist/leaflet.js"></script>

<!-- Chart.js for bar charts -->

<script src="https://cdn.jsdelivr.net/npm/chart.js"></script>

<style>

:root{

--bg:#041226;

--card:#071830;

--royal-1:#0b3d91;

--royal-2:#1e50d4;

--muted:#9bb5cc;

}

html,body{height:100%;margin:0;background:linear-gradient(120deg,#021028 0%, #04233a 60%);color:#e6f7ff;font-family:Inter,ui-sans-serif,system-ui,-apple-system,'Segoe UI',Roboto,'Helvetica Neue',Arial;}

.app{display:flex;height:100vh;overflow:hidden;}

.sidebar{width:88px;background:linear-gradient(180deg, rgba(255,255,255,0.02), rgba(255,255,255,0.01));border-right:1px solid rgba(255,255,255,0.03);padding:18px 8px;display:flex;flex-direction:column;align-items:center;gap:14px;}

.logo-box{width:56px;height:56px;border-radius:12px;background:linear-gradient(135deg, rgba(13,67,145,0.12), rgba(30,80,212,0.06));display:flex;align-items:center;justify-content:center;color:var(--royal-2);font-weight:700;font-size:18px;}

.navBtn{width:56px;height:56px;border-radius:12px;display:flex;align-items:center;justify-content:center;color:#cfefff;background:transparent;border:1px solid transparent;transition: all .18s;font-size:22px;cursor:pointer;}

.navBtn:hover{transform:translateY(-4px);background: rgba(255,255,255,0.02);border-color: rgba(255,255,255,0.03);box-shadow: 0 8px 18px rgba(0,0,0,0.35);}

.navBtn.active{background: linear-gradient(180deg, rgba(30,80,212,0.12), rgba(11,61,145,0.08));color:#fff;box-shadow:0 6px 20px rgba(30,80,212,0.18);}

.content{flex:1;position:relative;overflow:hidden;}

.pager{display:flex;height:100%;width:700%;transition: transform 0.8s cubic-bezier(.2,.8,.2,1);}

.slide{min-width:100vw;padding:24px;box-sizing:border-box;overflow:auto;}

.card{background:linear-gradient(180deg, rgba(255,255,255,0.02), rgba(255,255,255,0.01));border:1px solid rgba(255,255,255,0.03);border-radius:12px;padding:18px;color:#e6f7ff;}

.map-large{height:64vh;border-radius:12px;overflow:hidden;}

.map-small{height:42vh;border-radius:10px;overflow:hidden;}

.tiny{font-size:12px;color:var(--muted);}

.btn{transition: all .12s;border-radius:8px;padding:8px 12px;cursor:pointer;border:none;}

.btn-royal{background:linear-gradient(90deg,var(--royal-1),var(--royal-2));color:#fff;box-shadow:0 8px 20px rgba(30,80,212,0.15);}

.btn-royal:hover{filter:brightness(1.05); box-shadow:0 12px 28px rgba(30,80,212,0.24);}

.btn-soft{background:rgba(255,255,255,0.03);color:#e6f7ff;}

.charts-grid{display:grid;grid-template-columns:1fr;gap:8px;}

footer { text-align:center; padding:10px 0; color:#9fb7dd; font-size:12px; opacity:0.9; }

/\* LULC images row (side-by-side) \*/

.lulc-row { display:flex; gap:8px; align-items:flex-start; margin-top:12px; overflow:auto; }

.lulc-row img { max-height:220px; border-radius:8px; object-fit:contain; box-shadow: 0 6px 18px rgba(0,0,0,0.45); }

.study-preview { margin-top:12px; border-radius:8px; overflow:hidden; background:rgba(255,255,255,0.01); padding:8px; }

.study-preview img { width:100%; max-height:360px; object-fit:contain; border-radius:8px; }

@media (max-width:1024px){

.navBtn{width:48px;height:48px;font-size:20px;}

.lulc-row img{ max-height:160px; }

}

@media (max-width:680px){

.map-large{height:48vh;}

.map-small{height:36vh;}

.charts-grid{grid-template-columns:1fr;}

.lulc-row{flex-direction:column;}

.lulc-row img{ width:100%; height:auto; max-height:none; }

}

</style>

</head>

<body>

<div class="app">

<!-- Sidebar -->

<aside class="sidebar" role="navigation" aria-label="Main navigation">

<div id="logoBox" class="logo-box" title="GeoVision">GV</div>

<button id="btnHome" class="navBtn active" title="Home" aria-label="Home">🏠</button>

<button id="btnMap" class="navBtn" title="Pakistan Map" aria-label="Pakistan Map">🗺️</button>

<button id="btnLahore" class="navBtn" title="Lahore" aria-label="Lahore">🏙️</button>

<button id="btnMirpur" class="navBtn" title="Mirpur" aria-label="Mirpur">💧</button>

<button id="btnIslamabad" class="navBtn" title="Islamabad" aria-label="Islamabad">🌿</button>

<button id="btnMalakand" class="navBtn" title="Malakand" aria-label="Malakand">❄️</button>

<div style="flex:1"></div>

<div class="tiny">GeoVision</div>

<div class="tiny">LULC Dashboard</div>

</aside>

<!-- Content (pager) -->

<main class="content" role="main">

<div id="pager" class="pager">

<!-- Slide 0: Home -->

<section class="slide">

<div class="max-w-6xl mx-auto grid grid-cols-1 lg:grid-cols-2 gap-6 h-full">

<div class="card">

<div class="flex items-start gap-4">

<div class="w-20">

<div id="heroLogoPreview" class="w-20 h-20 rounded-lg bg-white/5 flex items-center justify-center text-xl text-emerald-200">GV</div>

</div>

<div>

<h1 class="text-2xl font-bold" style="color:var(--royal-2)">Detection and Analysis of Land Use/Land Cover Changes through Geospatial Techniques (2015–2025)</h1>

<p class="tiny mt-2">GeoVision WebGIS dashboard showing single-parameter trend for each study area. Use the city tabs to import study area and LULC maps (side-by-side) and view the year-wise bar chart (2015, 2020, 2025).</p>

<div class="mt-4 flex gap-3">

<label class="hidden-on-upload">

<input id="logoUpload" type="file" accept="image/png,image/jpeg" class="sr-only">

<button id="logoUploadBtn" onclick="document.getElementById('logoUpload').click()" class="btn btn-royal">Upload Logo</button>

</label>

<button id="enterToMap" class="btn btn-royal">Enter Dashboard →</button>

<button id="toggleAuto" class="btn btn-soft" title="Pause/Resume auto-slide">⏯️ Auto</button>

</div>

<p class="tiny mt-4">Tip: Upload Study Area map and LULC maps for each city. LULC maps will be displayed side-by-side (2015,2020,2025). After uploading maps the import buttons hide to keep UI clean.</p>

</div>

</div>

</div>

<div class="card">

<div class="tiny text-slate-300 mb-2">Project Preview</div>

<div id="homePreviewMap" class="map-large rounded-lg bg-black/5"></div>

<footer>Developed by GeoVision</footer>

</div>

</div>

</section>

<!-- Slide 1: Pakistan Map -->

<section class="slide">

<div class="max-w-7xl mx-auto">

<div class="card mb-4 flex items-center justify-between">

<div>

<h2 class="text-lg font-semibold">Pakistan — Study Areas</h2>

<div class="tiny">Click a marker to open that city's dashboard</div>

</div>

<div class="tiny">GeoVision</div>

</div>

<div class="card">

<div id="mapPakistan" class="map-large"></div>

<footer>Developed by GeoVision</footer>

</div>

</div>

</section>

<!-- Slide 2: Lahore -->

<section class="slide">

<div class="max-w-7xl mx-auto">

<div class="card mb-4 flex items-center justify-between">

<div>

<h3 class="text-xl font-semibold">🏙️ Lahore — Built-up Area (2015–2025)</h3>

<div class="tiny">Only Built-up trend (2015, 2020, 2025)</div>

</div>

<div><button class="btn btn-soft" onclick="goToMap()">Back to Pakistan Map</button></div>

</div>

<div class="grid grid-cols-1 lg:grid-cols-3 gap-4">

<!-- left: uploads + previews -->

<div class="lg:col-span-2 card p-3">

<h4 class="tiny font-semibold">Study Area</h4>

<div class="mt-2 flex gap-2 items-center">

<label><input id="lahoreStudy" type="file" accept="image/jpeg,image/png" class="sr-only"><button onclick="document.getElementById('lahoreStudy').click()" id="lahoreStudyBtn" class="btn btn-royal">Import Study Area Map</button></label>

<label><input id="lahoreLULC" type="file" accept="image/jpeg,image/png" multiple class="sr-only"><button onclick="document.getElementById('lahoreLULC').click()" id="lahoreLULCBtn" class="btn btn-royal">Import LULC Maps (2015/2020/2025)</button></label>

<button onclick="clearCityData('lahore')" class="ml-auto btn btn-soft">Clear</button>

</div>

<div id="lahoreStudyPreview" class="study-preview mt-3"><div class="tiny">No study area map uploaded yet.</div></div>

<div id="lahoreLULCRow" class="lulc-row" aria-live="polite">

<!-- side-by-side LULC images appear here -->

</div>

</div>

<!-- right: chart -->

<div class="card p-3">

<canvas id="lahoreBar" style="height:300px"></canvas>

<div class="tiny mt-3">Bar chart shows percentage of image area classified as Built-up (2015, 2020, 2025).</div>

<footer class="mt-3">Developed by GeoVision</footer>

</div>

</div>

</div>

</section>

<!-- Slide 3: Mirpur -->

<section class="slide">

<div class="max-w-7xl mx-auto">

<div class="card mb-4 flex items-center justify-between">

<div>

<h3 class="text-xl font-semibold">💧 Mirpur — Water Bodies (2015–2025)</h3>

<div class="tiny">Only Water trend (2015, 2020, 2025)</div>

</div>

<div><button class="btn btn-soft" onclick="goToMap()">Back to Pakistan Map</button></div>

</div>

<div class="grid grid-cols-1 lg:grid-cols-3 gap-4">

<div class="lg:col-span-2 card p-3">

<h4 class="tiny font-semibold">Study Area</h4>

<div class="mt-2 flex gap-2 items-center">

<label><input id="mirpurStudy" type="file" accept="image/jpeg,image/png" class="sr-only"><button onclick="document.getElementById('mirpurStudy').click()" id="mirpurStudyBtn" class="btn btn-royal">Import Study Area Map</button></label>

<label><input id="mirpurLULC" type="file" accept="image/jpeg,image/png" multiple class="sr-only"><button onclick="document.getElementById('mirpurLULC').click()" id="mirpurLULCBtn" class="btn btn-royal">Import LULC Maps (2015/2020/2025)</button></label>

<button onclick="clearCityData('mirpur')" class="ml-auto btn btn-soft">Clear</button>

</div>

<div id="mirpurStudyPreview" class="study-preview mt-3"><div class="tiny">No study area map uploaded yet.</div></div>

<div id="mirpurLULCRow" class="lulc-row" aria-live="polite"></div>

</div>

<div class="card p-3">

<canvas id="mirpurBar" style="height:300px"></canvas>

<div class="tiny mt-3">Bar chart shows percentage of image area classified as Water (2015, 2020, 2025).</div>

<footer class="mt-3">Developed by GeoVision</footer>

</div>

</div>

</div>

</section>

<!-- Slide 4: Islamabad -->

<section class="slide">

<div class="max-w-7xl mx-auto">

<div class="card mb-4 flex items-center justify-between">

<div>

<h3 class="text-xl font-semibold">🌿 Islamabad — Vegetation (2015–2025)</h3>

<div class="tiny">Only Vegetation trend (2015, 2020, 2025)</div>

</div>

<div><button class="btn btn-soft" onclick="goToMap()">Back to Pakistan Map</button></div>

</div>

<div class="grid grid-cols-1 lg:grid-cols-3 gap-4">

<div class="lg:col-span-2 card p-3">

<h4 class="tiny font-semibold">Study Area</h4>

<div class="mt-2 flex gap-2 items-center">

<label><input id="islamabadStudy" type="file" accept="image/jpeg,image/png" class="sr-only"><button onclick="document.getElementById('islamabadStudy').click()" id="islamabadStudyBtn" class="btn btn-royal">Import Study Area Map</button></label>

<label><input id="islamabadLULC" type="file" accept="image/jpeg,image/png" multiple class="sr-only"><button onclick="document.getElementById('islamabadLULC').click()" id="islamabadLULCBtn" class="btn btn-royal">Import LULC Maps (2015/2020/2025)</button></label>

<button onclick="clearCityData('islamabad')" class="ml-auto btn btn-soft">Clear</button>

</div>

<div id="islamabadStudyPreview" class="study-preview mt-3"><div class="tiny">No study area map uploaded yet.</div></div>

<div id="islamabadLULCRow" class="lulc-row" aria-live="polite"></div>

</div>

<div class="card p-3">

<canvas id="islamabadBar" style="height:300px"></canvas>

<div class="tiny mt-3">Bar chart shows percentage of image area classified as Vegetation (2015, 2020, 2025).</div>

<footer class="mt-3">Developed by GeoVision</footer>

</div>

</div>

</div>

</section>

<!-- Slide 5: Malakand -->

<section class="slide">

<div class="max-w-7xl mx-auto">

<div class="card mb-4 flex items-center justify-between">

<div>

<h3 class="text-xl font-semibold">❄️ Malakand — Snow (2015–2025)</h3>

<div class="tiny">Only Snow trend (2015, 2020, 2025)</div>

</div>

<div><button class="btn btn-soft" onclick="goToMap()">Back to Pakistan Map</button></div>

</div>

<div class="grid grid-cols-1 lg:grid-cols-3 gap-4">

<div class="lg:col-span-2 card p-3">

<h4 class="tiny font-semibold">Study Area</h4>

<div class="mt-2 flex gap-2 items-center">

<label><input id="malkandStudy" type="file" accept="image/jpeg,image/png" class="sr-only"><button onclick="document.getElementById('malkandStudy').click()" id="malkandStudyBtn" class="btn btn-royal">Import Study Area Map</button></label>

<label><input id="malkandLULC" type="file" accept="image/jpeg,image/png" multiple class="sr-only"><button onclick="document.getElementById('malkandLULC').click()" id="malkandLULCBtn" class="btn btn-royal">Import LULC Maps (2015/2020/2025)</button></label>

<button onclick="clearCityData('malkand')" class="ml-auto btn btn-soft">Clear</button>

</div>

<div id="malkandStudyPreview" class="study-preview mt-3"><div class="tiny">No study area map uploaded yet.</div></div>

<div id="malkandLULCRow" class="lulc-row" aria-live="polite"></div>

</div>

<div class="card p-3">

<canvas id="malkandBar" style="height:300px"></canvas>

<div class="tiny mt-3">Bar chart shows percentage of image area classified as Snow (2015, 2020, 2025).</div>

<footer class="mt-3">Developed by GeoVision</footer>

</div>

</div>

</div>

</section>

</div> <!-- end pager -->

</main>

</div>

<script>

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* Final dashboard with:

\* - Study Area import (single image) per city

\* - LULC maps import (multiple images) per city displayed side-by-side

\* - One bar chart per city (2015/2020/2025) with precomputed values

\* - Auto-slide (30s) + manual nav, upload buttons hide after upload

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

const AUTO\_SLIDE\_MS = 30000;

const AUTO\_RESUME\_AFTER\_MS = 60000;

const NUM\_SLIDES = 6;

let currentSlide = 0;

let autoSlideTimer = null;

let autoSlideOn = true;

let resumeTimer = null;

// Precomputed image-derived percentages (2015,2020,2025) per city (as requested earlier)

const cityParameterValues = {

lahore: { years:['2015','2020','2025'], values:[3.57, 3.72, 4.02], label:'Built-up (%)', color:'#8a8a8a' },

mirpur: { years:['2015','2020','2025'], values:[5.04, 5.42, 3.76], label:'Water (%)', color:'#0077be' },

islamabad: { years:['2015','2020','2025'], values:[7.31, 7.22, 6.82], label:'Vegetation (%)', color:'#2ecc71' },

malkand: { years:['2015','2020','2025'], values:[0.26, 0.27, 0.25], label:'Snow (%)', color:'#aee8ff' }

};

// Navigation & pager

const pager = document.getElementById('pager');

function goToSlide(idx, triggeredByUser=false){

if(idx < 0) idx = 0;

if(idx >= NUM\_SLIDES) idx = NUM\_SLIDES - 1;

currentSlide = idx;

pager.style.transform = `translateX(-${idx\*100}vw)`;

updateActiveNav();

if(triggeredByUser) pauseAutoThenResume();

// lazy render charts for cities when slide shown

if(idx >= 2 && idx <= 5){

const city = ['lahore','mirpur','islamabad','malkand'][idx-2];

renderBarForCity(city);

}

if(idx === 1 && !window.pakMapInited) initPakistanMap();

}

function updateActiveNav(){

document.querySelectorAll('.navBtn').forEach(b=>b.classList.remove('active'));

const map = {0:'btnHome',1:'btnMap',2:'btnLahore',3:'btnMirpur',4:'btnIslamabad',5:'btnMalakand'};

if(map[currentSlide]) document.getElementById(map[currentSlide]).classList.add('active');

}

document.getElementById('btnHome').addEventListener('click', ()=> goToSlide(0, true));

document.getElementById('btnMap').addEventListener('click', ()=> goToSlide(1, true));

document.getElementById('btnLahore').addEventListener('click', ()=> goToSlide(2, true));

document.getElementById('btnMirpur').addEventListener('click', ()=> goToSlide(3, true));

document.getElementById('btnIslamabad').addEventListener('click', ()=> goToSlide(4, true));

document.getElementById('btnMalakand').addEventListener('click', ()=> goToSlide(5, true));

document.getElementById('enterToMap').addEventListener('click', ()=> goToSlide(1, true));

document.getElementById('toggleAuto').addEventListener('click', ()=>{

autoSlideOn = !autoSlideOn;

if(autoSlideOn) startAutoSlide(); else stopAutoSlide();

document.getElementById('toggleAuto').textContent = autoSlideOn ? '⏯️ Auto' : '⏸️ Auto';

});

function startAutoSlide(){

if(autoSlideTimer) clearInterval(autoSlideTimer);

if(!autoSlideOn) return;

autoSlideTimer = setInterval(()=> {

const next = (currentSlide + 1) % NUM\_SLIDES;

goToSlide(next, false);

}, AUTO\_SLIDE\_MS);

}

function stopAutoSlide(){ if(autoSlideTimer){ clearInterval(autoSlideTimer); autoSlideTimer=null; } }

function pauseAutoThenResume(){

autoSlideOn = false; stopAutoSlide();

if(resumeTimer) clearTimeout(resumeTimer);

resumeTimer = setTimeout(()=> { autoSlideOn = true; startAutoSlide(); document.getElementById('toggleAuto').textContent='⏯️ Auto'; }, AUTO\_RESUME\_AFTER\_MS);

document.getElementById('toggleAuto').textContent='⏸️ Auto';

}

// Home preview map (tiny markers)

(function initHomePreview(){

try {

const m = L.map('homePreviewMap', { zoomControl:false, attributionControl:false }).setView([30.5,72],5);

L.tileLayer('https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png').addTo(m);

[[31.5497,74.3436],[33.1481,73.7516],[33.6844,73.0479],[34.4976,71.9722]].forEach(c => L.circleMarker(c, { radius:6, color:'#0077be', fillColor:'#0077be', fillOpacity:1 }).addTo(m));

window.homePreviewMap = m;

} catch(e){ console.warn('home preview map init failed', e); }

})();

// Pakistan map with markers

function initPakistanMap(){

try {

const m = L.map('mapPakistan').setView([30.5,72],5);

L.tileLayer('https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png').addTo(m);

const coords = { lahore:[31.5497,74.3436], mirpur:[33.1481,73.7516], islamabad:[33.6844,73.0479], malkand:[34.4976,71.9722] };

Object.keys(coords).forEach(k=>{

const mk = L.marker(coords[k]).addTo(m).bindTooltip(k.charAt(0).toUpperCase() + k.slice(1));

mk.on('click', ()=> { goToSlide({lahore:2,mirpur:3,islamabad:4,malkand:5}[k], true); });

});

window.pakMapInited = true;

window.pakMap = m;

} catch(e){ console.warn('pakistan map init failed', e); }

}

// ================== Upload helpers ==================

// Study area uploads (single image) - show preview & hide button after upload

function attachStudyUpload(city){

const input = document.getElementById(city + 'Study');

const preview = document.getElementById(city + 'StudyPreview');

const btn = document.getElementById(city + 'StudyBtn');

if(!input || !preview) return;

input.addEventListener('change', async ev => {

const file = ev.target.files[0]; if(!file) return;

const data = await fileToDataURL(file);

preview.innerHTML = `<img src="${data}" alt="${city} study" />`;

if(btn) btn.style.display='none';

});

}

// LULC maps upload (multiple) - display side-by-side, hide button after upload

function attachLULCUpload(city){

const input = document.getElementById(city + 'LULC');

const row = document.getElementById(city + 'LULCRow');

const btn = document.getElementById(city + 'LULCBtn');

if(!input || !row) return;

input.addEventListener('change', async ev => {

const files = Array.from(ev.target.files).filter(f=> f.type.startsWith('image/'));

if(!files.length) return;

// Try to order files by year in filename if possible (look for 2015/2020/2025)

const ordered = orderFilesByYearHint(files);

row.innerHTML = ''; // clear

for(const f of ordered){

const data = await fileToDataURL(f);

const img = document.createElement('img');

img.src = data;

img.alt = f.name;

img.title = f.name;

img.style.maxWidth = '33%';

row.appendChild(img);

}

// hide upload button for neatness

if(btn) btn.style.display = 'none';

});

}

// order files if filename contains year hints

function orderFilesByYearHint(files){

const yearOrder = ['2015','2020','2025'];

const placed = [];

const rest = [];

files.forEach(f=>{

const name = f.name.toLowerCase();

let found=false;

for(const y of yearOrder){

if(name.includes(y)) { placed[yearOrder.indexOf(y)] = f; found=true; break; }

}

if(!found) rest.push(f);

});

// fill blanks with remaining files in the order they arrived

const result = [];

let ri = 0;

for(let i=0;i<yearOrder.length;i++){

if(placed[i]) result.push(placed[i]);

else if(rest[ri]) result.push(rest[ri++]);

}

// append any extra

while(ri < rest.length) result.push(rest[ri++]);

return result;

}

// convert file to data URL

function fileToDataURL(f){

return new Promise((res, rej)=>{

const r = new FileReader();

r.onload = e => res(e.target.result);

r.onerror = e => rej(e);

r.readAsDataURL(f);

});

}

// Attach uploads for each city

['lahore','mirpur','islamabad','malkand'].forEach(city=>{

attachStudyUpload(city);

attachLULCUpload(city);

});

// Clear city (resets previews and shows import buttons)

function clearCityData(city){

// Study preview

const sp = document.getElementById(city + 'StudyPreview');

if(sp) sp.innerHTML = `<div class="tiny">No study area map uploaded yet.</div>`;

// LULC row

const row = document.getElementById(city + 'LULCRow');

if(row) row.innerHTML = '';

// show buttons

const studyBtn = document.getElementById(city + 'StudyBtn');

const lulcBtn = document.getElementById(city + 'LULCBtn');

if(studyBtn) studyBtn.style.display = 'inline-block';

if(lulcBtn) lulcBtn.style.display = 'inline-block';

// reset chart (re-render)

renderBarForCity(city);

}

// =============== Chart rendering (one bar per city) ===============

const chartInstances = {};

function renderBarForCity(city){

const cfg = cityParameterValues[city];

if(!cfg) return;

const canvasId = city + 'Bar';

const el = document.getElementById(canvasId);

if(!el) return;

if(chartInstances[canvasId]) { chartInstances[canvasId].destroy(); chartInstances[canvasId]=null; }

chartInstances[canvasId] = new Chart(el.getContext('2d'), {

type:'bar',

data:{

labels: cfg.years,

datasets: [{ label: cfg.label, data: cfg.values, backgroundColor: cfg.color }]

},

options:{

responsive:true,

plugins:{ legend:{ display:false }, tooltip:{ callbacks:{ label: ctx => `${ctx.parsed.y} %` } } },

scales:{ y:{ beginAtZero:true, ticks:{ callback: v => v + ' %' } } }

}

});

}

// initial render bars for all cities

['lahore','mirpur','islamabad','malkand'].forEach(c => renderBarForCity(c));

// expose goToMap helper used by "Back to Pakistan Map" buttons

function goToMap(){ goToSlide(1, true); }

// start auto-slide

startAutoSlide();

goToSlide(0, false);

</script>

</body>

</html>