Roadmap for an Indian $5T, 1M-Person AGI Lab

Physical Infrastructure: Campuses, Data Centers, Robotics

India would build purpose-built "AGI cities" combining campuses, data centers, labs and housing. **Campuses and Living Quarters:** Entire new high-tech cities (e.g. millions of square meters of R&D facilities, dormitories, clinics, farms and recreation) would be constructed. Housing and amenities would be massively subsidized—akin to giant company towns—so engineers live on-site at ultra-low cost[brookings.edu]. For example, tech companies like Google and Facebook have already pledged **$0.5–1B** each to build middle-income housing near their campuses[brookings.edu]. By analogy, the AGI lab could provide free or heavily discounted apartments, cafeterias and clinics on a campus scale (see Fig. 1). Organizing 1,000,000 people requires many such buildings: if 50,000 people live per "AGI city", then **20 cities** might be needed, each housing R&D offices, workshops and factories. Each campus would include specialized robotics labs, AI test-beds and manufacturing centers for hardware prototyping.

Figure: Example of high-density data center servers and fiber connectivity. The lab would build many such facilities, packing thousands of GPUs/TPUs per rack in purpose-built AI data centers to support intensive AGI training and inference. **Data Centers & Compute Farms:** Cutting-edge compute will drive infrastructure design. Multiple **hyperscale data centers** (each 10–50 MW or more) would house millions of GPUs/TPUs, neural-network ASICs and supporting CPU hardware. (For perspective, Oak Ridge's Summit supercomputer uses ~27,000 GPUs at 13 MW[olcf.ornl.gov]; AGI labs would build hundreds of times that compute.) These centers would be cooled by advanced systems – likely liquid cooling and evaporative chillers – to handle India's warm climate. (Tropical DCs face extra heat and humidity: Singapore's NUS/NTU testbed is specifically optimizing cooling for equatorial data centers[spectrum.ieee.org].) High-throughput networking between these centers is critical: a private fiber backbone would link campuses, and new submarine cables (e.g. IAX, Blue Raman, 2Africa Pearl) will expand India's global bandwidth fourfold by 2025[scmp.com]. In-total, this compute infrastructure would include exascale clusters, massive storage farms (hundreds of exabytes of archival data), and edge nodes for robot/IoT connections.

Figure: Example of modern campus residential blocks ("Student House" in Morocco). Similar dedicated housing complexes could be built for the AGI workforce, providing ultra-low-rent living with amenities on-site. **Amenities and Welfare:** Each campus would be self-sufficient: parks, shops, schools and hospitals to minimize living costs. By aggregating demand, the lab could negotiate bulk food, water and transport (for example, on-campus automated shuttles) to keep per-capita costs extremely low. Such integrated "tech cities" would leverage shared services (laundry, childcare, transit) and ensure workers' needs are met. (Tech firms already sponsor housing funds to help workers afford local living[brookings.edu]; here, government backing and scale allow even deeper subsidies.)

Energy, Networking and Hardware Provisions

Powering and connecting a 1M-person AGI lab requires country-scale infrastructure. **Energy:** We estimate the lab's compute and facilities will need tens of gigawatts (GW) of power continuously. For rough context, global data center electricity demand is projected to **double to ~945 TWh/yr by 2030**[iea.org] (roughly Japan's current consumption). Just 1 GW continuous is ~8.8 TWh/yr. If our AGI lab draws, say, 20–30 GW (30–45 TWh/yr) for computing and facilities, India would need dedicated generation. Likely mix: large solar farms (Sun Belt deserts), offshore/onshore wind (e.g. Tamil Nadu's wind corridor), and imported grid or even new nuclear plants. The government could allocate renewable zones near campuses to guarantee green energy and minimal carbon. Water-cooled plants (nuclear or gas) might be built with closed-loop cooling to avoid competition with agriculture. Cooling water for the data centers will be plentiful: designs could recirculate cooling water or use nearby coasts/lakes as heat sinks.

Networking: Inside each campus, a private high-speed mesh (40–400 Gbps links) will connect all data centers and labs. Globally, India's undersea cable capacity is quadrupling by 2025[scmp.com]. The lab would tie into these new cables (IAX, BLUE Raman, etc.) for global data exchange and collaboration. Peering with research networks and possible satellite constellations could ensure latency-sensitive tasks. Internally, fiber and line-of-sight microwave could link multiple campuses if the lab is geographically split.

Hardware R&D: To avoid supply-chain chokepoints, India would likely subsidize domestic chip fabs and manufacturing. The India Semiconductor Mission is already spurring new fabs with 50% capital support[india-briefing.com]. AGI demands custom ASICs (AI accelerators, neuromorphic chips) and robotics components. Part of the budget would fund local foundries (building on the $10B Tata-Powerchip fab plan[india-briefing.com]) and encourage international partnerships for semiconductor tech. Expect co-investment in next-gen GPUs/TPUs or in-house designs (and even quantum computing labs) to stay at the cutting edge.

Workforce Incentives and Economic Model

Attracting and motivating 1M AGI developers requires novel economic structures. **Compensation:** Rather than high up-front salaries, the lab could offer modest wages plus a stake in future AGI wealth. For instance, it might create an **"AGI Profit-Sharing Fund"** that grants workers equity-like claims on revenues generated by AGI technologies. This resembles employee stock-option plans: studies show broad ESOP schemes can significantly boost performance incentives[gsb.stanford.edu]. (In practice, workers could receive token dividends, company stock or a share of licensing fees from AGI deployments.) This future-pay model aligns worker interests with the project's success.

Cost-of-Living Subsidies: To achieve "ultra-low-cost" living, the lab would heavily subsidize necessities. As noted, tech giants like Google/Facebook are pledging **$0.5–1B each** for workforce housing[brookings.edu]; here, *billions* could be allocated to build dorms, subsidize groceries, healthcare, etc. Conceptually, one could view this as a form of **basic income** for AGI workers, funded by government and expected AGI profits. Proposals for a universal "AI dividend" to share gains from automation are gaining traction[blogs.lse.ac.uk]; our lab can implement a work-specific variant.

Talent Pools: Even if the focus is infrastructure, some funding can ensure global recruitment: visas, relocations, and international collaboration offices. Partnerships with universities and prizes (like XPRIZE) could draw top researchers. All workers would sign IP-secure contracts and ethics pledges to safeguard technology.

Location & Environmental Considerations

Ideal sites would balance land availability, climate, and resources. Possible regions include: interior deserts (plenty of sun for power, available land), Himalayan foothills (cooler climate, hydropower), or coastal zones (wind power, port access). Multiple campuses are likely to diversify risk (monsoons, heatwaves, or local unrest). Site selection would avoid ecologically fragile zones and factor in cooling needs. For example, temperate sites (e.g. high-altitude Kashmir/Ladakh or Himachal) could ease cooling loads, though remoteness complicates logistics. All campuses would have robust disaster planning: flood defenses for monsoon seasons and backup off-site data vaults.

Environmental impact must be managed. Data centers need enormous cooling water; closed-loop and air-cooled designs can limit usage. Waste heat could be repurposed (e.g. heating algae farms or greenhouses) to improve efficiency. By building with green certifications (LEED, net-zero energy), the lab can aim for sustainable operation despite its scale.

Organizational Structure

A million-person lab requires layered, matrixed management. It might be organized like a federation of **"Institutes"** (e.g. AI Research, Robotics, Cognitive Science, Infrastructure, Policy), each with autonomy under a central council. Within institutes, smaller **"labs"** or project teams (thousands of people each) focus on specific goals (e.g. core AGI, healthcare AI, energy optimization). This mirrors how NASA and CERN manage large projects: a central governing body with functional divisions and cross-cutting committees for ethics and security.

Top-level governance could include international oversight (to ease geopolitical concerns) and an Ethics/IP board. Operationally, a "flat" culture (common in tech) can be scaled by having each team follow agile methods and clear milestones. Mandatory ethics training, tight security for sensitive areas, and blockchain-based IP audits might protect innovations.

Budget Allocation (10-Year, $5 Trillion)

The $5T would be divided roughly as follows:

Category	10-yr Budget (USD)	% of Total	Includes (Examples)
Research & Development (salaries, projects)	$1,000 billion	20%	Staff salaries, AI/robotics R&D, prototyping
Campus & Facilities (construction)	$1,500 billion	30%	Buildings, labs, housing complexes
Compute Infrastructure (hardware)	$750 billion	15%	GPUs/TPUs, storage arrays, networking gear
Energy & Utilities	$500 billion	10%	Power plants (solar/wind/nuclear), cooling
Transportation & Connectivity	$250 billion	5%	Internal transport (EV shuttles), fiber, 5G
Healthcare & Worker Welfare	$500 billion	10%	Food services, medical centers, schools
Security & IP Protection	$250 billion	5%	Cybersecurity, physical security, audits
Contingency/Administration	$250 billion	5%	Oversight, legal, unexpected costs
Total	**$5,000 billion**	**100%**	

Note: These allocations are illustrative. For context, global R&D spending was ~$2.75T in 2023[wipo.int]; this project alone doubles that.

Case Studies & Analogues

Several historical and contemporary projects offer perspective:

- **Manhattan Project (1940s):** Employed ~130,000 and cost $2 billion then ($27 billion today)[en.wikipedia.org]. In a decade, it transformed nuclear physics. The AGI lab is ~10× larger in people and ~200× the budget, showing its unprecedented scale.
- **Apollo Program (1960s):** At its peak employed ~400,000 workers and contractors[en.wikipedia.org], with a total cost ≈$25B (1973 dollars). Apollo's rapid tech breakthroughs (computing, materials) hint at what massive funding can achieve.
- **CERN's LHC:** Constructing the Large Hadron Collider cost 4,300 MCHF ($4–5 billion)[home.cern], and runs at ~0.75 TWh/yr[home.cern]. The AGI lab would far exceed CERN's energy use, but CERN's multi-nation model (2,500 staff + thousands of visiting researchers) illustrates big-science management.
- **High-speed Rail (China):** China spent ~$360 billion in a decade to build 13,670 miles of high-speed rail[archivemacropolo.org]. This example shows how ambitious state projects can rapidly achieve infrastructure feats.
- **Modern Tech Campuses:** Global tech hubs like Shenzhen (SEZ since 1980) grew from 30,000 to over 13 million people[investopedia.com] and now lead in electronics (Huawei, Tencent). Corporate R&D campuses (e.g. Microsoft Redmond, Google Mountain View) incubate innovation in city-like complexes. These examples suggest that building new cities around tech is feasible and can drive economic growth.

- **US Data Center Expansion:** The industry predicts ~50%–100% global DC power growth by 2027–2030[iea.orgiea.org]. By 2025, data center staffing is projected to reach ~2.3 million globally[datacenterdynamics.com]. Hosting 1 million staff in one country would absorb a huge fraction of this emerging demand.

These analogies support feasibility: large R&D projects can be executed with sufficient will and funding. Unlike secret military projects (Manhattan), this AGI lab would be a public-private initiative, giving India transparency and workforce incentives.

Long-Term Economic Impact

If successful, the payoff could dwarf the investment. Global estimates project AI could add $15–30 trillion to world GDP by 2030. India's own GDP (~$3 trillion today) would multiply manifold if it dominates AGI. Profits from AGI products (software, automation tools, new industries) could flow back to India, funding pensions or development (an "AI dividend"). Even a 1% slice of global tech market growth over 20 years would return many multiples of $5T to the economy.

Moreover, the human capital and tech spin-offs would be enormous. A million skilled workers and 5,000 researchers trained on AGI projects would seed countless startups and high-tech industries. Intellectual property (patents, trade secrets) would strengthen national security and prosperity. By investing in this AGI "moonshot", India could leapfrog into a leadership position in the defining technology of the century.

Sources: World R&D data[wipo.int]; historical project costs and staffing[en.wikipedia.orgen.wikipedia.orghome.cern]; tech housing subsidies[brookings.edu]; tropical data center research[spectrum.ieee.org]; and industry analyses[datacenterdynamics.comscmp.com].

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