

“Culling of Problematic Wildlife in Nepal”

Legal, Socio-Economic and Technical Assessment, with a Recommended Pathway for Wild Boar and Macaques

Policy note

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Contents

- Executive Summary
 - What this note recommends
- 1. Purpose and Scope
- 2. The Problem
 - 2.1 What the damage data actually show
 - 2.2 The wider conflict picture
 - 2.3 Why the problem is growing
 - 2.4 The political moment
 - 2.5 What the current declarations actually permit
- 3. The Legal Assessment
 - 3.1 International conventions: what they require, and what they do not
 - 3.2 Nepal’s domestic law: the authority already exists
 - 3.3 The three-species legal split
 - 3.4 Where the current framework falls short
- 4. What Other Countries Actually Do
 - 4.1 Australia: the kangaroo harvest is not a cull
 - 4.2 India: the power was granted and almost nobody used it
 - 4.3 Japan: a national halving target, missed
 - 4.4 Europe: the arithmetic and the disease
 - 4.5 Hong Kong: the cleanest comparison available
 - 4.6 The regional cases: Bhutan, Sri Lanka and Malaysia
 - 4.7 Six lessons
- 5. The Technical Assessment
 - 5.1 The arithmetic that defeats the policy
 - 5.2 For macaques, partial culling is worse than useless
 - 5.3 Where culling has actually worked
 - 5.4 Method-by-method appraisal for Nepal
 - 5.5 Why Nepal must rule out toxicants absolutely
 - 5.6 Population estimation: what Nepal can and cannot afford
 - 5.7 Disease, food safety, and why culled meat must not be distributed
- 6. The Socio-Economic Assessment
 - 6.1 The relief system is the real failure, and it is fixable
 - 6.2 The cultural dimension is not a footnote
 - 6.3 Labour, firearms and the delivery gap
 - 6.4 Cost-benefit, honestly stated

- 7. Recommended Pathway for Nepal
 - 7.1 The framing decision that everything else follows from
 - 7.2 Recommendation A — Replace the annual Rule 36 declaration with a conditional derogation regime
 - 7.3 Recommendation B — Protect *Macaca assamensis* absolutely, and require species discrimination
 - 7.4 Recommendation C — Build a Wildlife Damage Control Service
 - 7.5 Recommendation D — Prohibitions written into the instrument
 - 7.6 Recommendation E — Fix the relief scheme before anything else
 - 7.7 Recommendation F — Fund physical exclusion and community deterrence as the primary instrument
 - 7.8 Recommendation G — Sustained fertility control for macaques
 - 7.9 Recommendation H — A three-year, six-district paired pilot
 - 7.10 Indicative budget
 - 7.11 Sequencing
- 8. Risks and How They Are Managed
- 9. Conclusion
- Annex A — Species Legal Status at a Glance
- Annex B — Comparative Case Summary
- Annex C — Draft Conditions for a Lethal Control Authorisation
- Annex D — Items Requiring Verification Before Cabinet Submission
- References

A note on sources. Citations are given as bracketed numbers keyed to the numbered reference list at the end of the note. Statutory provisions are cited by section or rule and by the Nepal Law Commission text where available. Where a figure could not be verified against a primary source, that is stated in the text.

Executive Summary

Wild boar (*Sus scrofa*) and rhesus macaque (*Macaca mulatta*) now cause more reported crop damage across more of Nepal than any other wildlife. The National Agricultural Census 2078 records monkey damage in 3,927 of 6,036 surveyed wards and wild boar damage in 2,362 [1, 2]. Members of Parliament, provincial officials and a number of scientists have called for culling, usually pointing to Australia’s kangaroo harvest or India’s “vermin” declarations [3, 4, 5]. This note examines whether that is legally available to Nepal, whether it would work, and what Nepal should do instead of, or alongside, it.

Six findings shape the recommendation.

1. No international convention prevents Nepal from culling either species. Nepal is a Party to the CBD, CITES, Ramsar and the World Heritage Convention. It is not a Party to CMS [6] and cannot join the Bern Convention, which is a Council of Europe instrument [7]. None of these regulates the domestic killing of native wildlife. CBD Article 3 affirms Nepal’s sovereign right to manage its own resources [8]; Target 4 of the Kunming-Montreal Global Biodiversity Framework in fact obliges Nepal to “effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence” [9]. CITES bites only on international trade [10]. It is irrelevant to killing a macaque in Arghakhanchi and decisive the moment any part of that macaque crosses a border. The frequently heard claim that “the conventions do not allow us to kill them” is not correct and should stop being used.

2. Nepal already has culling authority and has been using it since 2020. Rule 36 of the National Parks and Wildlife Conservation Rules, 2030 lets the Government declare any non-Schedule-1 species harmful to agriculture, in a specified area for a specified period, by Gazette notice [11]. Wild boar has been declared under this power repeatedly since Magh 2076 (February 2020) [12], most recently on 23 February 2026 [13, 14]. Rhesus macaque was declared for the first time in Magh 2081 and again on 29 Magh 2082 (12 February 2026) [15]. Section 11 of the Act plus Rule 9(1) allow district hunting licences [16, 11]; Arghakhanchi Division Forest Office issued exactly such licences for wild boar, barking deer and spotted deer on 23 August 2026 [17]. Section 12 requires that hunting-reserve quotas be set from wildlife censuses [16]. **The legal question facing Nepal is therefore not whether to permit culling. It is why the culling Nepal has already permitted has produced almost nothing, and what would have to change for a lethal-control programme to be worth running at all.**

3. The reason it has produced nothing is capacity, not law. Arghakhanchi has four valid private firearm licences in the entire district, and the Chief District Officer states there is no legal provision to issue new ones [17]. India's experience is the same in a more extreme form: Himachal Pradesh declared rhesus macaque vermin across 93 tehsils, and official records show **five monkeys were killed** in the whole period the order was in force [18]. Kerala devolved shooting powers to panchayat presidents [19] and still depends on roughly 250 licensed shooters paid ₹1,500 an animal, who boycotted the programme in February 2026 over a licensing dispute [20, 21]. A permissive law without shooters, payment, disposal and supervision is a political gesture.

4. Culling at any intensity Nepal can achieve will not reduce wild boar numbers, and may make macaque damage worse. Suppressing a wild boar population requires removing 55–70 per cent of it every year [22, 23]; modelling shows a 20 per cent annual cull has no effect at all [23], and where immigration is possible — which describes every Nepali mid-hill landscape — the ceiling is about a 50 per cent reduction even at 60 per cent cull intensity [24]. Heavy hunting shortens wild boar generation time from 3.6 to 2.3 years and leaves the population still growing at 11.5 per cent a year [25]. Spain's annual hunting bag rose fourteenfold between 1985 and 2022 while the population increased [26]. Japan set a target to halve its deer and boar populations by 2023, tripled its macaque cull to over 20,000 a year, saw macaque distribution expand by 150 per cent, and extended the deadline to 2028 [27, 28]. For macaques the risk is sharper than futility: killing troop leaders fragments troops, which then disperse into new areas and behave more aggressively [28, 29]. Partial, uncoordinated culling has been shown to push the problem onto neighbouring land rather than solve it [30].

5. Three specific hazards make an ill-designed Nepali cull actively dangerous. African swine fever is present in Nepal's domestic pigs — 48 outbreaks, an estimated 70,000 deaths and roughly USD 20 million in losses [31] — and was confirmed in a wild boar at Shuklaphanta in February 2023 [32]; mass drive hunting is now understood to disperse the disease [33, 34]. Nepal's Gyps vulture recovery — white-rumped vultures growing at 22 per cent a year since 2013 [35] — rests on a network of open carcass feeding sites, and a single poisoned-bait incident in Nawalparasi in 2021 killed 67–69 vultures [36]. And Nepal has no game meat inspection: the Animal Slaughterhouse and Meat Inspection Act, 2055 operates in three municipalities out of 753 [37, 38], while the adjacent Indian mid-hills have had repeated wild-boar trichinellosis outbreaks, including one that killed 11 people [39].

6. The interventions with the strongest evidence in exactly Nepal's two species are not lethal. Hong Kong's macaque sterilisation programme cut the birth rate from about 60 per cent to 30 per cent and has held the population flat at roughly 2,000 for sixteen years [40]. Himachal Pradesh sterilised between 140,000 and 187,000 macaques and its population fell from 317,512 in 2004 to about 136,000 in 2019 [41, 42]. Neither jurisdiction achieved anything comparable with its lethal powers. For wild boar, a nine-wire electric fence backed with 45 mm nylon mesh to 1.7 m excluded wild boar, sika deer **and Japanese macaques** completely in Japanese field trials [43], and Nepal's own 17 km solar fence in Jhapa cut conflict incidents by 96 per cent and crop losses by 93 per cent against elephants [44].

What this note recommends

Nepal should stop framing the objective as population reduction and reframe it as **damage reduction**. On that framing the package is:

	Recommendation
A	Replace the annual, nationwide, unconditional Rule 36 declarations with a conditional, area-specific, evidence-tested derogation regime modelled on Habitats Directive Article 16 [45] and the US cormorant permit rule [46]: no satisfactory alternative, serious damage demonstrated, no detriment to the population, named authority, specified methods, compulsory dated return.
B	Keep Assamese macaque (<i>Macaca assamensis</i>) entirely outside any culling authority. It is protected under the Act [47, 16], Near Threatened globally, Vulnerable nationally [48] and easily confused with rhesus in the field. A general “monkey” permit will kill it and expose the holder to a 5–15 year sentence [16].
C	Build a professional Wildlife Damage Control Service — small, trained, salaried, equipped, operating on request — instead of relying on a firearms-licence pool that does not exist [17, 49].
D	Rule out, in the instrument itself: all toxicants , aerial shooting, night shooting in settled areas, translocation of macaques, and any commercial trade in carcasses or export of macaque specimens.
E	Fix the relief scheme first. A Rs 10,000 crop cap requiring twelve documents produced 101 payments against 14,821 reported conflict cases in Madhesh over two years [50, 51]. Move to a single form, photographic and ward-level verification, a statutory 30-day payment deadline, and payment conditional on the farmer having a prevention measure in place [52].
F	Fund physical exclusion and community deterrence at scale — the mesh-plus-electric design for macaques [43], solar electric fencing for wild boar [44, 53] — as the primary instrument, with relief and lethal control as the secondary and tertiary layers.
G	Run a three-year, six-district paired pilot with treatment and control wards, a defined damage metric, an independent evaluator and a stopping rule, before any national rollout. Budget indicatively Rs 1.2–1.5 billion over three years against the Rs 411.1 million already allocated to the Human–Wildlife Coexistence programme in FY 2083/84 [54].

The honest summary for Ministers is this. Culling is lawful, it is already permitted, it is politically attractive, and on its own it will not work. What will reduce damage is barriers, guarding, a relief system that pays, and — for macaques only — sustained fertility control. Lethal control has a place inside that package as a targeted, professional, last-resort tool aimed at identified individuals and troops. It has no place as the headline of a national policy, and a national policy that leads with it will spend money, kill animals, attract litigation and leave farmers exactly where they are.

1. Purpose and Scope

This note responds to a request to examine, in depth, whether Nepal should adopt culling of problem wildlife, drawing on international law, comparative practice and technical evidence, and to recommend methods.

It covers three species, which must be treated separately in law and in practice:

- **Wild boar (*Sus scrofa*)** — not protected [47]; already subject to an agriculture-harmful declaration [13]; not listed on any CITES Appendix [55]; IUCN Least Concern.
- **Rhesus macaque (*Macaca mulatta*)** — not protected [47]; subject to an agriculture-harmful declaration since Magh 2081 [15]; CITES Appendix II by virtue of the order-level listing “PRIMATES spp.” [55]; IUCN Least Concern.
- **Assamese macaque (*Macaca assamensis*)** — **protected** under Schedule 1 of the National Parks and Wildlife Conservation Act, 2029 [47, 16]; CITES Appendix II [55]; IUCN Near Threatened globally and Vulnerable in Nepal’s national Red List [48].

Other species named in the debate — porcupine, jackal, deer, nilgai, elephant — are referred to where the evidence is directly relevant but are not the subject of the recommendations.

The note is based on published government reports, peer-reviewed literature, statutory texts and news reporting up to 24 August 2026. Points where sources conflict or where a figure could not be verified are flagged in the text; a list of items requiring verification before the note is used for a Cabinet decision appears at Annex D.

2. The Problem

2.1 What the damage data actually show

The strongest national evidence is the ward-level module of the National Agricultural Census 2078 (2021/22), which asked 6,036 wards — around 90 per cent of Nepal’s territory — which wildlife damaged crops [1, 2].

Rank	Species	Wards reporting damage
1	Monkey (बौंदर)	3,927
2	Porcupine (दुम्सी)	2,752
3	Jackal (स्याल)	2,534
4	Wild boar (बौंदेल)	2,362
5	Deer (मृग)	1,668
6	Tiger / leopard	1,492

Source: National Agricultural Census 2078, ward-level module, as reported by the National Statistics Office [2, 1]. Corroborated for the monkey and wild boar figures by [13] and [56].

Monkey damage is worst in Koshi (758 wards) and Bagmati (732 wards) [2]. Two points about this statistic matter for policy. First, it counts wards where damage was reported, not the share of holdings affected or the value lost — it should not be presented as a household percentage. Second, the two species now dominating the political debate rank first and fourth; porcupine and jackal, which nobody proposes to cull, rank second and third.

There is no official national estimate of the value of crop loss to wildlife in Nepal. The frequently quoted “tens of billions of rupees annually” figure comes from an opinion column extrapolating from household-level losses of Rs 3,000–20,000 a year across roughly a third of rural households [57]. It is a reasonable order-of-magnitude guess and should be labelled as such.

Where careful studies exist, they are local:

- **Rhesus macaque.** A 2026 study by the National Trust for Nature Conservation with Tribhuvan University’s Central Department of Zoology surveyed 1,846 households across 44 highly affected local units in five provinces. It found roughly Rs 50 million in annual loss across the surveyed farms, Rs 25 million of it in maize alone, with an average maize loss of 312 kg per farmer per year — over

half of production. Maize loss reached 90 per cent in Gandaki and 88 per cent in Karnali. The team directly counted 20,395 rhesus macaques in the 44 units and estimated at least 104,137 in the mid-hills, with an average troop of 42.7 and a largest troop of 198. Around 70 per cent of surveyed farmers said they supported controlled culling, and 80 per cent were unaware that compensation existed [58].

- **Wild boar.** A 2024 study in *Global Ecology and Conservation* measured damage at Shuklaphanta National Park and Dhorpatan Hunting Reserve: 87,036 kg of crops and USD 26,389 in one year, with wild boar taking about 8 per cent of total production at Dhorpatan [59].
- **The abandonment feedback.** A 2024 study in *Environmental Research Letters* quantified the loop in Bhumlu Municipality, Kavrepalanchowk: 212 households, 421 parcels, a mean of 1.66 migrants per household, 41 per cent of cultivated parcels suffering wildlife damage, mean damage severity around 8 per cent, and cropland abandonment of 15.5 per cent over five years, with wild boar the primary problem species [60].

Note the population-estimate problem, which will recur throughout this note. Reported estimates of Nepal's rhesus macaque population range from 104,137 — a direct-count extrapolation for the mid-hills [58] — to around 500,000, a widely quoted press figure [61]. One Nepali rendering of the parliamentary motion gives 1.04 million, almost certainly a transcription error. **Nepal does not have a defensible national population estimate for either wild boar or rhesus macaque.** A national macaque census led by Tribhuvan University with NTNC began on 28 March 2025, but its sampling frame is self-selected — around 230 of 753 local units responded and 40–45 self-identified as problem areas — so it will produce a census of conflict hotspots, not a national estimate [62]. The two must not be conflated.

2.2 The wider conflict picture

Departmental data compiled in *Banko Janakari* show wild boar as the second or third largest conflict species by case count [63]:

Species	2018/19	2019/20	2020/21	2021/22	2022/23
Leopard	1,104	1,865	1,639	3,963	4,041
Elephant	2,349	3,257	1,503	2,058	2,394
Wild boar	1,454	2,409	3,788	3,944	2,058
Tiger	150	188	331	517	434
Rhino	452	129	333	325	335
Snow leopard	52	63	551	1,193	418
Total	6,251	8,163	8,455	12,672	10,426

Source: DNPWC data compiled in *Banko Janakari* 36(1) [63].

Human casualties are dominated by elephant, tiger and leopard, not by the crop raiders. In FY 2023/24 there were 36 deaths and 97 critical injuries, of which wild boar accounted for two deaths [63]. This matters because the political case for culling boar and monkeys is an economic and livelihood case, not a public-safety case, and the instrument should be designed accordingly.

2.3 Why the problem is growing

Three drivers are well evidenced and one is asserted but unproven.

Forest expansion is real. Nepal's forest cover rose from about 26 per cent in 1992 [64] to 39.6 per cent in the 1990s series, 44.74 per cent in 2015, 45.31 per cent in 2019 and **46.08 per cent in 2024** — 43.38 per cent forest plus 2.7 per cent shrub [65]. Protected areas cover 34,420 km², or 23.4 per cent of the country, and some 23,162 community forest user groups manage around 2.5 million hectares [65]. Kavrepalanchok and

Sindhupalchok saw 1.84 per cent annual forest expansion between 2010 and 2015 [64]. *(The 44.74 per cent figure still in wide circulation is the 2015 number and should be retired.)*

Out-migration has removed the guarding labour. More than 90 per cent of overseas migrants are men aged 15–34 [5]. Fields are defended by women, children and the elderly, or not at all. The Kavrepalanchowk study records 1.66 migrants per household [60].

Farmland is going out of production. The 2078 census records 4.13 million agricultural households and 2.22 million hectares cultivated: holdings up 7.8 per cent on 2011 but area farmed down 12.2 per cent, with temporarily fallow land almost doubling to around 60,000 hectares, and average parcel size falling from 0.21 to 0.19 ha [66, 1]. There is no official split between wildlife damage and out-migration as causes; the academic literature treats them as reinforcing each other [60]. *(The widely quoted “one million hectares abandoned” figure could not be traced to any government document and should not be used.)*

The forest-quality argument is plausible but unevicenced. Several Nepali primatologists argue the driver is not the quantity of forest but its composition — monoculture plantation replacing native food-bearing forest, so macaques find less to eat inside the forest and more outside it [5]. This is a serious hypothesis and it changes the policy prescription substantially. No peer-reviewed Nepali study quantifying it could be located. It should be commissioned, not asserted.

2.4 The political moment

The sequence over the last seven years explains why this question has reached the Prime Minister’s Office.

Date	Event	Source
20 Magh 2076 (6 Feb 2020)	First declaration of wild boar as harmful to agriculture, for FY 2076/77. Conservationists objected that it would normalise indiscriminate killing.	[12, 67]
8 Mangsir 2080 (23 Nov 2023)	Declaration extended nationwide, citing Rule 36.	[68, 69]
Magh 2081 (early 2025)	First declaration of rhesus macaque as harmful to agriculture.	[15]
Feb 2025	Parliamentary discussion of wildlife crop damage.	[3]
28 March 2025	National macaque census launched by TU and NTNC.	[62]
25 March / 13 April 2026	Monkey sterilisation pilot agreed and begun in Diktel, Khotang — a two-year study led by a six-member expert team, following a mayoral hunger strike that produced a 16-point government agreement.	[70]
29 Magh 2082 (12 Feb 2026)	Rhesus macaque declared harmful to agriculture for a second year.	[15]
23 Feb 2026	Wild boar declaration renewed for one year, adult animals only.	[13, 14]
19 May 2026	Fifteen-member technical task force on human-wildlife conflict formed, mandated to recommend policy and legal reform and to select 20 pilot wards.	[71]
17 July 2026	Nepal’s first Wildlife Risk Insurance Policy launched — Rs 1,500 premium, 18 species, cover including agricultural crops.	[72]
10 Aug 2026	Urgent public importance motion registered in the House of Representatives by Narendra Kumar Kerung MP, supported across parties, demanding an integrated national action plan, an accountability report and quarterly reporting.	[3, 4]

23 Aug 2026	Arghakhanchi Division Forest Office invites applications for hunting licences for wild boar, barking deer and spotted deer.	[17]
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Two things stand out. The Government has been steadily expanding lethal permissions since 2020 without evaluating whether they work. And Parliament is demanding a national action plan [4], which is itself evidence that none exists — repeated searches found no approved Human-Wildlife Conflict Management Strategy for Nepal. What exists is the Relief Guideline 2080, which addresses payment after the event [51], and the Protected Area Management Strategy 2022–2030, which addresses conflict inside protected areas, where this problem largely is not [73].

2.5 What the current declarations actually permit

Both the wild boar and the rhesus macaque notices follow the same template, and its terms are frequently misreported [13, 15, 69].

Permitted: on private fields, threshing floors and orchards, an individual or group may drive away, chase, capture or kill the declared animal without prior permission when it is damaging crops or property.

Not permitted: killing or capture inside national parks, wildlife reserves, hunting reserves, conservation areas or national forest; commercial exploitation of any animal killed.

Conditions: captured animals must be handed to the nearest protected area office or division forest office; the ward office must be informed; a death during capture requires a deed witnessed by a ward representative and at least five local people; the carcass must be buried, or its weight-based value (पञ्चकिर्ती मूल्य) deposited as government revenue where local non-commercial use is allowed; offices must report casualty data upward at set intervals.

Duration: one year from Gazette publication, renewable.

Three observations. The geographical limitation to private land is a real constraint, since much boar and macaque activity is at the forest edge. The witness-and-burial requirement is sound in principle — it is the only thing standing between this policy and Nepal’s vulture population [36] — but there is no evidence it is enforced or that the reported casualty data are compiled anywhere. And a permission that lasts twelve months and must be renewed annually gives no operator any basis to invest in equipment, training or a multi-year programme.

(One point requires verification before the note is finalised: the 2020 notice cited Rule 35 [12] and the 2023 and 2026 notices cite Rule 36 [68, 13]. An intervening amendment probably renumbered the provision. The current rule number should be confirmed from the Gazette.)

3. The Legal Assessment

3.1 International conventions: what they require, and what they do not

Nepal’s treaty position

Instrument	Status	Bearing on domestic culling
Convention on Biological Diversity (1992)	Party (ratified 1993; in force for Nepal 21 Feb 1994)	Permissive. See below [8]
Nagoya Protocol	Party (in force 28 Mar 2019)	None
Cartagena Protocol	Non-Party	None

CITES (1973)	Party since 1975 — the first Asian State to ratify	Trade only. Decisive for export [10]
CMS / Bonn Convention	Non-Party	None. No strict-protection obligations apply [6]
Ramsar (1971)	Party (in force 17 Apr 1988), 10 sites	“Wise use” applies at Ramsar sites only
World Heritage Convention	Party (accepted 20 Jun 1978)	Articles 4–5 engage inside Chitwan and Sagarmatha
Bern Convention	Not a Party and could not readily join — a Council of Europe instrument	None. Value is as a drafting model [7]
AIHTS (humane trapping)	Non-Party; a closed EU–Canada–Russia instrument	None. Value is as a technical standard
SAARC Environment Convention (2010)	Adopted; entry into force unconfirmed	Cooperation framework only

The CBD is permissive, not prohibitive. Article 3 states that States have “the sovereign right to exploit their own resources pursuant to their own environmental policies.” Article 8, on in-situ conservation, is qualified throughout by “as far as possible and as appropriate”; the operative constraint it imposes is Article 8(d), maintenance of “viable populations.” Article 10 requires Parties to adopt measures “to avoid or minimize adverse impacts on biological diversity” while treating sustainable use as a Convention objective. Article 11 requires “economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity” — the hook for a relief scheme or for community benefit from a control programme [8].

One drafting error should be avoided. **CBD Article 8(h), on controlling and eradicating alien species, does not apply.** Wild boar and both macaques are native to Nepal. Citing 8(h) as the basis for culling them would be legally wrong and would invite criticism [8].

The Global Biodiversity Framework obliges Nepal to act. Target 4 of the Kunming-Montreal framework, adopted in December 2022, requires Parties to “effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence.” This is the first time human-wildlife conflict has appeared in a global biodiversity target. It does not prescribe a method and does not exclude lethal ones. Targets 5 and 9 supply the design constraints: use and harvesting must be “sustainable, safe and legal, preventing overexploitation, minimizing impacts on non-target species and ecosystems, and reducing the risk of pathogen spillover” [9]. For Nepal, the pathogen clause is not decorative — see the African swine fever discussion at section 5.7.

CBD Decision 14/7 on sustainable wildlife management contains directly transposable language: rationalising wildlife law to focus on sustainability, distinguishing species that are resilient to hunting from those that are not, calculating and periodically adjusting sustainable offtake rates, and establishing quota and monitoring systems with communities [74]. The Addis Ababa Principles and Guidelines add the requirement of adaptive management based on science and local knowledge, and of policies and laws being in place before use begins [75].

CITES: irrelevant to killing, decisive for export.

Sus scrofa is not listed on any CITES Appendix. The only Suidae listed are the four *Babryrousa* species and the pygmy hog *Sus salvanius*, all Appendix I [55]. Wild boar meat, hides and tusks can be exported from Nepal without CITES paperwork.

Both macaques are Appendix II, not by name but through the order-level entry “PRIMATES spp. (Except the species included in Appendix I)” [55]. Searching the Appendices for “*Macaca mulatta*” returns nothing, which has misled analysts before.

CITES defines “trade” as export, re-export, import and introduction from the sea [10]. It has no jurisdiction over domestic take, killing, possession or use. Nothing in CITES requires Nepal to obtain permission or make any finding before culling. But the moment any macaque specimen or derivative leaves Nepal — meat, skin, bone, hair, tissue samples, live animals — Article IV engages fully and requires:

1. an export permit;
2. a **non-detriment finding** by Nepal’s CITES Scientific Authority that export will not be detrimental to the survival of the species — legally awkward to make while the State is simultaneously reducing the population; and
3. a **legal acquisition finding** that the specimen was not obtained in contravention of Nepali law. **If macaques are culled without a valid domestic legal basis, this finding fails and no lawful export is possible** [10]. This is the sharpest link between domestic culling law and international obligation.

Nepal is currently rated **Category 2** under the CITES National Legislation Project — legislation believed generally to meet some of the requirements. The CITES Act, 2017 is in force but its implementing rules are still being developed, and Nepal is under Standing Committee scrutiny to complete them [76]. A culling-plus-export scheme announced in that posture would attract Secretariat attention.

The precedent is already on the record. In 2005 the Nepal Biodiversity Research Society obtained a licence and purchased 200 rhesus macaques from the Government for about USD 69,400, then sought to export 25 offspring for biomedical research. The Supreme Court ruled against the scheme, the Government revoked the licence, and the animals were released, on the basis that the export violated Nepali law and CITES [77]. In 2023 the proposal resurfaced, following Sri Lanka’s plan to export 100,000 toque macaques to China [78]. **The pathway from “problem animal” to “commercial export” has already been tested in Nepal and failed. It should not be re-proposed.**

IUCN guidance treats lethal control as a legitimate tool, within limits. IUCN Resolution WCC-2020-Res-101 on human-wildlife conflict, adopted with about 99 per cent approval, urges governments to “develop specific laws, regulations and incentives” and says nothing about killing either way [79]. The *IUCN SSC Guidelines on Human-Wildlife Conflict and Coexistence* (2023) devote a full chapter — Chapter 26, “Lethal control tools” — to the subject rather than excluding it [80]. Set against that, the FAO’s standard treatment is blunt: lethal control in Africa “is still widely used, but rather with the purpose of maintaining social peace than resolving the human-wildlife conflict problem definitively,” and “the killing of some animals often has only a short-term effect” [81].

No treaty-level humane-killing standard binds Nepal, but three benchmarks are widely used and should be adopted by reference: the WOAH Terrestrial Animal Health Code Chapter 7.6 standard that methods “should result in immediate death or immediate loss of consciousness lasting until death,” carried out by personnel with “the relevant skills and competencies” [82]; the AVMA euthanasia guidelines [83]; and the seven International Consensus Principles for Ethical Wildlife Control, whose seventh principle — that control should be “based on the specifics of the situation rather than negative labels (pest, overabundant) applied to the target species” — is a direct critique of the legislative technique Nepal is currently using [84].

3.2 Nepal’s domestic law: the authority already exists

National Parks and Wildlife Conservation Act, 2029 (1973) [16]

Provision	Effect
Section 10	Schedule-1 wildlife is protected and hunting is prohibited. A proviso allows wildlife causing considerable loss to human beings or to domestic animals and birds to be killed or captured on the order of a prescribed officer
Section 11	No person may hunt without a licence, save for prescribed species. Applications go to a prescribed officer with a prescribed fee; the officer may refuse without giving reasons

Section 12	The prescribed officer determines the annual quota of wildlife that may be hunted inside a hunting reserve on the basis of wildlife censuses conducted from time to time
Section 14	Government may prescribe closed periods and areas by Gazette notice
Section 21	Killing or wounding wildlife while defending oneself against attack is not an offence
Section 26	Penalties: 5–15 years’ imprisonment and Rs 50,000–100,000 for endangered species; 1–10 years and Rs 40,000–75,000 for other protected wildlife

National Parks and Wildlife Conservation Rules, 2030 (1974) [11]

Provision	Effect
Rule 9(1) with Schedule 1	District hunting licence: Nepali citizens only, ten days’ validity, up to three mammals and ten birds, including two wild boar , one barking deer and one peacock, with a maximum of three birds a day
Rule 36	Government may declare any wildlife or bird other than those in Schedule 1 of the Act to be harmful to agriculture in a particular area for a particular period , by Gazette notice. Once declared, the species may be hunted without a licence, subject to prescribed restrictions

The architecture is already complete. Rule 36 is Nepal’s equivalent of India’s Section 62 vermin power [85], and it is better drafted: it is area- and time-limited on its face, it cannot reach protected species, and — unlike India’s — it sits with the executive that actually administers forests rather than with a distant federal ministry. Section 12 supplies a census-based quota principle that most countries had to legislate specially. Section 11 and Rule 9 supply a licensing route, which Arghakhanchi has just used [17].

Nepal also has a working sport-hunting precedent. Dhorpatan Hunting Reserve, established in 1987 across roughly 1,300 km² in Baglung, Myagdi and Rukum (East), runs six hunting blocks. Foreign hunters may take blue sheep and Himalayan tahr; since FY 2022/23 Nepali hunters may take **wild boar** in Dhorpatan valley and Gurja, a decision made by the chief conservation officer in response to local complaints of crop damage [86]. Licences are allocated by competitive tender; a premium blue sheep permit reached Rs 320,000 in 2024 [87]. Recent annual revenue is Rs 40–50 million [88, 89]. Quotas are census-based under Section 12 — recently up to 26 blue sheep and 20–22 tahr, against actual takes of 19 to 30 animals [88]. Night hunting is prohibited and only mature males may be taken.

Dhorpatan also demonstrates the failure mode Nepal must avoid. **There is no revenue-sharing mechanism.** The reserve has no gazetted buffer zone, so the Act’s provision returning 30–50 per cent of protected area income to buffer-zone communities does not reach it. Hunters arrive by chartered helicopter, stay inside their blocks, and local hotels and homestays see almost none of the money. The reserve’s own residents lose potatoes to wild boar [90, 89]. If Nepal builds a licensed offtake system without a benefit-sharing rule, this is what it will look like at scale.

3.3 The three-species legal split

This is the most important legal point in the note, and it is currently being ignored in public debate.

	<i>Sus scrofa</i>	<i>Macaca mulatta</i>	<i>Macaca assamensis</i>
NPWC Act Schedule 1	Not listed	Not listed	PROTECTED (item 1) [47]
Penalty for killing	Rule-36 declaration applies	Rule-36 declaration applies	5–15 years’ imprisonment, Rs 50,000–100,000 [16]

CITES	Not listed	Appendix II	Appendix II [55]
IUCN global	Least Concern	Least Concern	Near Threatened
Nepal national Red List	—	—	Vulnerable [48]
Legally available for culling	Yes, under current declaration	Yes, under current declaration	No

Rhesus and Assamese macaques are difficult to distinguish in the field by an untrained person, and Assamese macaques occur through much of the mid-hill range where the conflict is worst [48]. A general permission to kill “monkeys” damaging crops, granted to farmers without species-identification training, will kill Assamese macaques. Every such killing is an offence carrying a five-to-fifteen-year sentence [16], and the offence will be committed by a farmer acting in the belief that the Government told him he could.

Nepali primatologists have raised this specifically, noting a widely circulated case in which the animals involved were Assamese macaques [29]. It is the strongest legal argument against a broad culling permit, and it is also the easiest to fix — see the recommendations at section 7.3.

3.4 Where the current framework falls short

Nepal’s problem is not the absence of power but the design of its exercise. Six defects:

1. **No conditionality.** The Rule 36 declaration is unconditional [11, 13]. It does not require the farmer to have tried anything else, does not require damage to be demonstrated, and does not require any assessment of effect on the population. Every comparable regime abroad that survives legal challenge — Habitats Directive Article 16 [45], Bern Convention Article 9 [7], the US cormorant permit [46] — is built on cumulative conditions.
2. **No species discrimination.** The declarations name “wild boar” and “red monkey” but there is no mechanism to prevent the killing of Assamese macaques or pygmy hogs under cover of them [29].
3. **No competent operator.** Section 11 licences require a firearm licence [16, 49]. Arghakhanchi has four. The Chief District Officer says no more can lawfully be issued [17]. Nepal has no professional wildlife control capacity outside protected areas; the Nepal Army’s 9,046 conservation personnel are deployed inside twelve national parks, one wildlife reserve and one hunting reserve — that is, in the places where this problem largely is not [91].
4. **No enforced disposal.** Burial with five witnesses is the stated condition [13]. There is no evidence of compliance monitoring, and the consequences of failure fall on a vulture population that took twenty years and substantial international investment to stabilise [35, 36].
5. **No data return.** The notices require reporting upward every two months, or monthly in the boar case [15, 69]. No compiled national dataset of animals killed under these declarations appears to have been published. Nepal therefore cannot say whether six years of declarations have killed six animals or six thousand.
6. **Annual renewal.** A twelve-month permission cannot support training, equipment purchase, contracting or evaluation.

4. What Other Countries Actually Do

Nepali advocates of culling most often cite Australia. The comparison is instructive but not in the way it is usually meant.

4.1 Australia: the kangaroo harvest is not a cull

Australia's commercial kangaroo harvest operates under state wildlife legislation with Commonwealth approval of a Wildlife Trade Management Plan under the *Environment Protection and Biodiversity Conservation Act 1999* before any product may be exported. Quotas are species-specific and set annually from aerial and ground surveys — in South Australia in 2025, 20 per cent for red kangaroo, 15 per cent for western grey and euro, 10 per cent for eastern grey, 5 per cent for tammar wallaby [92].

Three features are routinely omitted when the example is cited in Nepal.

Take runs far below quota. South Australia took 100,594 animals in 2023 — 16 per cent of the 634,200 quota [92]. New South Wales took 532,158 in 2024, 36 per cent of quota and 6 per cent of the population [93]. Nationally, against a population of 36.5 million and a quota of around 5 million, the actual kill is about 4 per cent of the population and quotas are regularly unmet [94].

The welfare standard is the strictest in the world. The National Code of Practice requires a head shot destroying vital brain areas; mandates bolt-action centre-fire rifles with specified minimum calibres and expanding projectiles; prohibits semi-automatics, subsonic and full-metal-jacket ammunition; prescribes methods for dependent young; and requires shooters to pass an accreditation test — five rounds inside a 75 mm circle at 100 m — at least every five years [95].

It is an industry, not a public programme. It exists because there is a commercial market for meat and leather that pays for the shooting [94]. Remove the market and the shooting stops. Nepal has no such market for boar or macaque, and section 5.7 explains why creating one would be a public health error.

Australia's feral pig programme is the closer analogue and it is a story of failure to suppress. Around 13.5 million feral pigs occupy 45 per cent of the continent, causing at least AUD 100 million in agricultural damage a year [96]. New South Wales removed roughly 240,000 pigs over three years with AUD 40 million of funding [97], and populations remained at historic highs. The president of NSW Farmers put the requirement plainly: “unless we can control 80 per cent of these animals, they're out breeding” [98].

4.2 India: the power was granted and almost nobody used it

Section 62 of the Wildlife (Protection) Act 1972 lets the Central Government declare a Schedule II animal to be vermin “for any area and for such period as may be specified” [85]. Three notifications followed in 2015–16: nilgai and wild boar in Bihar (1 December 2015), wild boar across thirteen districts of Uttarakhand (February 2016, one year) [99], and rhesus macaque across 93 tehsils of Himachal Pradesh (24 May 2016, renewed) [18].

The outcomes diverged completely by species.

- **Bihar culled 4,729 nilgai between 2016 and 2019**, using professional shooters hired from Hyderabad. One contractor claimed over 250 animals personally [100].
- **Himachal Pradesh killed five monkeys** in the entire period the vermin order was in force, according to official Forest Department records [18].

The reasons for the macaque result are the reasons Nepal should expect the same: no willing shooters, religious objection, no disposal pathway, no payment. Meanwhile roughly 100 monkey carcasses were found near Shimla in one year, attributed to **farmer poisoning** — a permissive legal signal normalising illegal killing without producing legal killing [101].

Litigation followed immediately. Gauri Maulekhi challenged all three notifications and the constitutionality of Section 62 itself. On 20 June 2016 the Supreme Court refused a stay but attached a caveat Nepal should adopt: **wild animals may be culled only if they enter human habitations, not in the forests** [102].

Kerala is the most transferable case. By a Government Order of 30 May 2022, the Chief Wildlife Warden delegated the Section 11(1)(b) power — permitting the hunting of an animal dangerous to life “or to property (including standing crops on any land)” [85] — to gram panchayat presidents, municipal chairpersons and mayors as honorary wildlife wardens. Poisoning, explosives and electrocution were prohibited [19]. Local self-government institutions culled over 5,000 wild boar between May 2022 and December 2025, on top of about 2,500 by the Forest Department [20].

Then it stopped. Kerala has roughly 250 authorised shooters for the whole state and pays ₹1,500 an animal, often after a day’s wait. In February 2026 a departmental order excluding sports-licence holders — about half the shooter pool — triggered a statewide boycott [20]. The underlying difficulty is that wildlife authorisation and firearms licensing run through two separate regulatory systems that “intersect without clearly defined procedural guidance” [21]. Where legal shooting is slow, farmers use illegal snares, which kill humans and non-target animals [21]. The episode has been analysed in the peer-reviewed literature as a case of problem wildlife being politicised [103].

Two further design features of Indian law are worth importing. **Section 11(3): any animal killed or wounded under the section is Government property**, which blocks a commercial incentive to over-kill [85]. And Himachal’s alternative track — sterilisation — outlasted its vermin order and continues regardless of schedule status [18].

4.3 Japan: a national halving target, missed

In December 2013 Japan’s Ministry of the Environment and Ministry of Agriculture jointly set a target to halve sika deer and wild boar populations within ten years: deer from 2.61 million to 1.305 million, boar from 880,000 to 440,000 [104]. The 2014 amendment to the Wildlife Protection, Control and Hunting Management Act turned hunting into a public project with prefectural designated management programmes and certified capture businesses; a 2007 special measures act pushed authority and money down to municipalities, which pay per-animal subsidies backed by a national grant of ¥8,000 a head, topped up locally to an effective ¥13,000–20,000 for an adult boar and ¥13,000–23,000 for a Japanese macaque [105, 106].

By FY2023 sika deer had increased 5.6 per cent and wild boar had fallen 6.9 per cent against a 50 per cent reduction target. In September 2023 the deadline was extended to FY2028 [27]. Japan captures around 1.2 million deer and boar a year to achieve this [104].

The macaque record is more directly relevant to Nepal. Japan’s annual macaque cull rose from under 2,000 in the early twentieth century to over 10,000 by 1998 and over 20,000 by 2011 — the highest in recorded history. Over the same period occupied range expanded by about 150 per cent, and by 2017 more than 40 per cent of troops were causing visible agricultural damage. The mechanism is precise: stopgap culling without identifying target troops fails because “neighbouring troops will immediately try to intrude and occupy the open range,” and indiscriminate removal fragments troops and can increase damage risk. What worked was targeting individuals with documented crop-raiding behaviour, reducing troop size to 30–40 animals, and whole-troop removal by corral trap where justified [28].

One finding from Japan should be read carefully in Kathmandu: recorded crop damage fell after 2001 **mainly because farmland was abandoned**, not because the conflict was solved [28]. Nepal’s mid-hills are on the same trajectory, and damage statistics will improve for the wrong reason.

Japan also disproves the “we can feed people with the meat” argument. Against roughly 1.2 million animals captured annually, the *gibier* industry processed 2,085 tonnes of game meat in FY2022 across 750 facilities [107]. The overwhelming majority of culled animals are buried or incinerated at public cost.

4.4 Europe: the arithmetic and the disease

Wild boar is not protected under the EU Habitats Directive; it is a game species under national hunting law [45]. The European evidence base is therefore about effectiveness rather than legality, and it is unusually clear.

A 2026 review in the *European Journal of Wildlife Research* concludes that wild boar “are capable to increase even when 50% of the population is eliminated annually.” Spain’s annual hunting bag rose fourteenfold between 1985 and 2022, from 32,000 to 450,000 animals, while hunter numbers fell and the population grew; concurrent drivers were a 34 per cent increase in forest area and a 24 per cent increase in irrigated cropland. The authors conclude that “long-term proactive management based only on hunting, predation and diseases cannot compensate the population growth favoured by increasing forest surface and favourable crops” [26].

A 2026 global systematic review in *Animals* quantifies method effectiveness as monthly population reduction [108]:

Method	Population reduction per month
Aerial shooting	56.2%
Poison baiting	27.6%
Trapping	6.0%
Individual (recreational) hunting	3.9–4.0%

The same review found that studies incorporating animal-welfare assessment were **no less effective** than those that did not — 53.1 per cent versus 50.9 per cent, $p = 0.9$ [108]. That finding removes the main argument for cutting corners on humaneness.

Two Italian studies tested the specific question Nepal is asking — does hunting reduce crop damage? In Friuli Venezia Giulia (2019–2022), “the current hunting system did not produce significant effects on crop damages by wild boar,” and a one-unit increase in boar hunted in 2019 was followed by a significant increase in abundance in 2020 [109]. In the Ticino and Lake Maggiore park, 2,423 boar were removed between 2006 and 2017 with “no significant correlations between the number of removed wild boars and the number of damage events or refunds” [110].

Belgium shows what success actually costs. Facing an African swine fever incursion in September 2018, Belgium fenced a 1,106 km² management area with 237 km of new fencing coordinated with France and Luxembourg, creating twenty enclosed compartments; removed 7,077 wild boar by driven hunt, trapping and thermal-imaging night shooting; and spent about 60,631 person-hours on systematic carcass search and destruction. It was declared free of the disease in November 2020 — 26 months, at roughly €300 per hectare [111].

Poland shows the alternative. In January 2019 Poland targeted the removal of over 200,000 wild boar, aiming at a 90 per cent reduction, organised through the national hunting association. More than 1,000 scientists signed warnings that mass drive hunts are pointless and can spread African swine fever through human-mediated contact with infected blood. Licensed hunters refused to participate [33].

Germany shows what makes hunters turn up. In ASF restriction zones, 82.9 per cent of hunters received a per-boar payment against 32 per cent elsewhere, and hunters named “appropriate financial incentives” the single biggest motivator; affected regions took 20–22 boar per hunter per year against 16 in unaffected areas [112].

4.5 Hong Kong: the cleanest comparison available

Hong Kong ran two population-control programmes on the two species Nepal is arguing about, in the same jurisdiction, with published results.

Macaques, non-lethal. Since 2007 the Agriculture, Fisheries and Conservation Department, with the Ocean Park Conservation Foundation, has trapped, anaesthetised, endoscopically sterilised and same-day released wild macaques, paired with a statutory feeding ban. The birth rate fell from around 60 per cent in 2009 to about 30 per cent, and the population has held stable at roughly 2,000–2,100 for over sixteen years. The department’s own assessment is that the programme “is effective in controlling monkey numbers” [40].

Wild boar, lethal. Hong Kong previously ran boar contraception and relocation, abandoned it, and in November 2021 reinstated capture-and-kill using monthly tranquiliser-gun operations supported by CCTV and trapping devices. Over 910 animals were killed in the first two years and 723 in 2025. The population fell from around 2,000 in 2021 to about 990 in 2025, a 50.5 per cent reduction, and injuries from boar attacks fell 80 per cent between 2020 and 2025. **The cost was HK\$105.6 million, about USD 13.46 million** [113, 114].

That is the true cost structure of effective lethal control: a small, confined, wealthy, high-capacity territory spending USD 13.5 million and running monthly professional operations for four years to halve one boar population.

4.6 The regional cases: Bhutan, Sri Lanka and Malaysia

Bhutan is often invoked as the Buddhist state that refuses to kill wildlife. Its own plant protection authority states that “farmers can only kill a wild boar on their property if it is causing damage to crops or property,” with a statement from the local Chiwog Tshogpa accepted where the animal is shot on private land and dies on government land within 200 m. The same source concedes lethal methods are “often the most practical way” to manage populations, and puts Bhutan’s crop losses at USD 4–5 million a year in maize and paddy, with guarding consuming 20–50 per cent of labour input on potato farms [115]. But Bhutan’s money goes into barriers: a chain-link fencing programme scaling from 87 km to 3,400 km, protecting some 45,000 acres, valued at around USD 60 million under the 13th Five-Year Plan [116].

Sri Lanka is the cautionary tale for anyone proposing export. In 2023 a Chinese company sought 100,000 toque macaques, ostensibly for zoos. Population estimates ranged from a ministerial claim of three million to a primatologist’s reference to a 1977 study estimating under 600,000 — the same estimate gap Nepal faces. Crop damage was put at LKR 30.2 billion in the first half of 2022 alone [117]. The proposal was cancelled on 26 June 2023 on the decision of the Attorney General [118]. The species is Endangered and CITES Appendix II; the non-detriment finding could not plausibly have been made [55].

Malaysia shows the end state of mass primate culling. Peninsular Malaysia culled 97,119 long-tailed macaques in 2012 and 68,413 in 2013 [119]. In 2022 the IUCN uplisted the long-tailed macaque to **Endangered** [120]. A species that is culled as a pest can be pushed onto the Red List, which then constrains every subsequent management option.

4.7 Six lessons

1. **Legal authorisation is the easy part; uptake is the hard part.** India granted the power and killed five monkeys in Himachal [18]. Kerala devolved it and its shooters boycotted [20]. Nepal has granted it six times and cannot say what happened.
2. **Recreational and opportunistic shooting does not suppress wild boar.** Roughly 4 per cent monthly reduction against 56 per cent for aerial shooting [108]; boar grow even at 50 per cent annual offtake [26].
3. **Every effective programme is professional, funded and continuous.** Hong Kong USD 13.5 million [113]; Belgium €300 per hectare and 60,631 person-hours [111]; England’s badger cull £1,311 per animal in policing costs alone [121]. Cheap culling is ineffective culling.
4. **Payment per animal is the operative lever.** Japan’s effective bounty is ¥13,000–23,000 [106]; Kerala’s is ₹1,500 and its programme collapsed [20]. In German ASF zones, participation followed the money [112].
5. **Carcass use is aspirational.** Japan eats a fraction of one per cent of what it kills [107]. Assume Nepal pays for disposal.
6. **The best documented results in Nepal’s two species are non-lethal.** Himachal [41, 42] and Hong Kong [40] both achieved with sterilisation what neither achieved with lethal powers.

And one that applies to Nepal with unusual force: **litigation and reputational challenge are certain.** Every case in this section drew a court challenge or an international complaint [102, 121, 118].

5. The Technical Assessment

5.1 The arithmetic that defeats the policy

Wild boar are among the most productive large mammals on earth. Population growth is most sensitive to piglet survival, not adult survival, which means hunting that concentrates on adults is the least efficient possible strategy [22].

The removal rate required to suppress a wild boar population is 55–70 per cent per year [22, 23]. Modelling of an *isolated* population — the best possible case, with no immigration — over a twenty-year horizon gives [23]:

Annual cull rate	Outcome
20%	Fails. Population still grows
40%	Marginal decline; small chance of reaching target in 20 years
60%	Target reached in about 16–18 years
80%	Rapid decline; target reached comfortably

Once immigration is allowed, the ceiling is roughly a **50 per cent reduction even at 60 per cent cull intensity** [24]. Nepal’s mid-hills are continuous farmland-forest mosaic with no barriers of any kind. There is no isolated population anywhere in the country.

Heavy hunting makes wild boar harder to control. A long-term French comparison of two populations found [25]:

	Lightly hunted	Heavily hunted
Population growth rate (λ)	1.242	1.115 — still growing at 11.5% a year
Generation time	3.6 years	2.3 years
Elasticity ratio, adult to juvenile survival	2.63	1.27 — the lowest ever recorded across 22 ungulate species

Two things follow. Heavy hunting reduced the growth rate by about ten percentage points and still left the population expanding. And the collapse in the elasticity ratio means adult and juvenile survival became almost equally important, so **the population cannot be controlled by targeting one age class** [25]. “Just shoot the big boars” is not a strategy. The same hunting pressure also selects for earlier birth dates, an evolutionary as well as a demographic response [122].

Selective harvest matters more than total numbers. To achieve the same reduction in growth rate, a programme must remove either 20 large females over 50 kg or 88 small females under 30 kg [123]. A bounty scheme that rewards the number of animals is roughly four times less efficient than one that mandates removal of large adult females.

5.2 For macaques, partial culling is worse than useless

The failure mode is behavioural rather than demographic.

Nepali and Japanese primatologists describe the same mechanism. Killing a troop leader fractures the troop; the fragments disperse into new areas, spreading the problem geographically and raising aggression toward people, which increases both injury and zoonotic transmission risk. Removing animals from a range does not

empty it — neighbouring troops move in within a season. And a population reduced by fifty animals recovers within one to two years through increased reproduction [28, 29, 124].

The empirical proof that partial culling can displace a problem rather than solve it comes from the British badger trials. Reactive culling achieved about a 30 per cent density reduction and produced a **27 per cent increase** in the target problem overall. On culled land there was no protective effect; on land 1–3 km away the odds of breakdown rose 24 per cent per doubling of animals culled, and at 3–5 km, 27 per cent [30, 125]. The mechanism — partial removal disrupting social and spatial organisation, increasing ranging and dispersal — is exactly the mechanism the macaque specialists describe.

For Nepal this translates directly. **If culling authority is exercised ward by ward or district by district without landscape coordination, damage will move to the neighbouring palika.** Every affected local government will then demand its own authority, and the process will repeat.

5.3 Where culling has actually worked

Success cases share a specific set of conditions:

- a closed or fenced population, or an island;
- no immigration;
- removal rates sustained well above 60–70 per cent a year;
- professional teams, not recreational hunters;
- several methods used in sequence;
- landscape-scale coordination under one authority;
- a defined endpoint and a budget to reach it.

Examples: complete elimination of a newly established wild pig population in the northern United States, achieved over eleven years of sustained agency effort [126]; a 53 per cent density reduction in one year through whole-sounder removal on a controlled site [127]; Hong Kong’s confined boar population [113]; Belgium’s fenced ASF zone [111].

None of these conditions holds in Nepal’s mid-hills. That is not a counsel of despair — it is the reason the objective has to change from population reduction to damage reduction.

5.4 Method-by-method appraisal for Nepal

Method	Effectiveness	Cost	Welfare	Legal position in Nepal	Verdict
Ground shooting, trained operator	Moderate for targeted removal; negligible for population control [108]	Salary plus equipment; the binding cost is people	Best available lethal method with correct calibre, head or chest placement, two-shot rule [128]	Requires firearm licence under the Arms and Ammunition Act, 2019, issued by the CDO; effectively unavailable [49, 17]	Use, but only through a state service with its own firearms authority

Recreational licensed hunting / public	3.9–4.0% monthly population reduction; produces bag numbers, not results [108, 127]	Revenue-positive on paper	Variable, unmonitorable	Available now under s.11 and Rule 9 [16, 11]	Do not scale. Selects for large males, not females; cannot reach required offtake; creates a constituency with an interest in maintaining the population [26]
Night shooting with thermal optics	High encounter rate; used in Belgium's endgame [111]	Equipment-intensive	Acceptable with trained operator	Night discharge tightly controlled; terrain and settlement density make backstops unreliable	Rule out in settled mid-hills. Consider only in defined, cleared operational areas
Aerial shooting	56.2% monthly reduction — the most effective method known [108]	High per hour; cost per animal rises steeply as density falls [126]	Acceptable to good [128]	No prohibition, but no practical basis	Rule out on terrain and human-safety grounds, not cost
Corral whole-sounder trapping (boar) /	53% density reduction in a year; 1.9 pigs per trap-night against 0.68 for opportunistic methods [127]	USD 4,600–8,800 per remote-triggered trap [127]	Good if killing at the trap is done correctly [129]	No firearms problem for the trapping itself	Recommended as the primary lethal method for wild boar
Cage / corral trapping (macaque)	The only route to whole-troop handling; the basis of both Himachal and Hong Kong programmes [41, 40, 28]	Moderate capital, high labour	Good if holding time is short	Permitted; capture is already required to be reported [15]	Recommended, primarily as the delivery mechanism for sterilisation
“Judas” animal with telemetry	Valuable only at very low density, in an endgame [126]	High per animal	Acceptable	Would need a basis for releasing a collared wild animal	Not relevant to Nepal at this stage

Toxicants (sodium nitrite, 1080, warfarin)	27.6% monthly reduction; 70–90% activity reduction in Australian trials [108, 130]	Cheap per hectare	Sodium nitrite better than 1080; warfarin inhumane [130, 131]	No vertebrate toxicant registration pathway	Rule out categorically. See 5.5
Surgical sterilisation (macaque)	Hong Kong: birth rate 60%→30%, population flat 16 years [40]. Himachal: population roughly halved 2004–2019 [41, 42]	Himachal spent Rs 77.5 million on eight centres, plus Rs 500 per animal trapping incentive [41]	Good; vasectomy and tubectomy preserve hormones and social rank [41]	Permitted	Recommended for macaques, at scale and for the long term
Immunocontraception (GonaCon, PZP)	Never sufficient alone; useful only alongside a 40–60% cull; requires 40–80% of females treated [23, 24]	Requires capture, so cost equals capture cost	Good	No registration	Do not pursue for boar. Evaluate for macaque only if a remote-delivery route emerges
Translocation (macaque)	Fails in almost every documented case; Delhi moved about 20,000 monkeys over fifteen years and created a new problem [132]	High	Poor — homing, mortality, social disruption	Permitted	Rule out. Nepal's mid-hill forests are already occupied
Electric fence, standard multi-wire (boar)	9 of 11 studies found effective exclusion [133]	USD 9,000–10,800 per km installed; USD 1,100 per km per year maintenance [134]	No welfare cost	Permitted	Recommended where parcel size and slope permit; the maintenance cost is the risk [53]

Electric fence with mesh (macaque)	The Japanese 9-wire, 45 mm nylon mesh, 1.7 m, 3,600–6,800 V design excluded macaques completely [43]	Not published; perimeter-to-area ratio unfavourable on small terraces	No welfare cost	Permitted	Pilot as the primary macaque intervention. This is the only design with a published complete-exclusion result
Guarding, machans, group deterrence	Ranked most effective for all wildlife in Bardia [135]; best combinations are fencing plus guarding [136]	Labour, which is what the hills no longer have	No welfare cost	Permitted	Support, with paid community rosters; do not assume free household labour
Deterrents (noise, light, chilli, AI alerts)	Habituation within days for macaques [137]; no controlled evidence for chilli against boar or macaques [134]	Low	No welfare cost	Permitted	Fund as research, not as policy [138]
Crop switching	Ranked last of eight intervention classes globally [134]; proposed everywhere, tested nowhere	Depends on market access	No welfare cost	Permitted	Pilot as an evaluation, not a rollout; requires procurement centres to work [139]
Diversionary feeding / forest fruit planting	No controlled evidence exists [136, 134]. The closest analogue — supplementary feeding of wild boar — increases populations and aggregates animals [22]	Moderate	—	Permitted	Do not fund without a randomised design. The plausible outcome is a larger population next to farmland

5.5 Why Nepal must rule out toxicants absolutely

This is the clearest recommendation in the note.

The vulture argument. Nepal holds three Critically Endangered *Gyps* vultures. Veterinary diclofenac was banned in 2006 and effectively cleared from the market by 2012. White-rumped vultures were declining at about 14 per cent a year until 2013 and have been recovering at about 22 per cent a year since; slender-billed vultures went from –25 per cent to +41 per cent. Nepal established South Asia’s first Vulture Safe Zone, covering over 30,000 km², and a network of community “vulture restaurants” that **deliberately trains vultures to feed on carcasses left in the open** [35].

In April 2021, villagers in Nawalparasi poisoned dog carcasses to kill stray dogs. **Between 67 and 69 vultures died**, including 35 white-rumped and one slender-billed — Nepal’s largest recorded mass vulture mortality event [36]. The mechanism is live, in exactly the districts concerned, without any government toxicant programme.

The technical argument. Sodium nitrite, the most humane pig toxicant available, is still not registered by the US EPA after more than fourteen years of development [140]. A 2018 Texas field trial was **halted immediately** after 179 non-target animals were found at fourteen bait stations — 121 white-crowned sparrows, 26 red-winged blackbirds, 11 dark-eyed juncos, four wild turkeys and others [141]. The mortality was caused by pigs scattering bait around the station, where granivorous birds ate it; later trials reached zero non-target deaths only by adding an active inflatable deterrent device at every station [142]. Sodium fluoroacetate (1080) is less humane, has no antidote, kills over about four hours with convulsions, and is extremely dangerous to dogs through both primary and secondary poisoning [131]. Nepal’s mid-hills have free-roaming dogs, free-ranging village pigs, goats, cattle and children everywhere.

The precedent argument. Diclofenac was individually low-risk and legally used, and it destroyed over 97 per cent of three vulture species across South Asia through carcass exposure [35]. Nepal has already learned this lesson at enormous cost. The United States reached the same practical conclusion from the opposite direction: warfarin-based Kaput bait was registered in January 2017 and withdrawn from Texas within months under legal and industry pressure [143].

Recommendation: the instrument establishing any control programme should prohibit, in terms, the use of any toxicant, poison bait or chemical agent for the killing of wildlife, and should prohibit the use of lead ammunition, requiring copper monolithic projectiles and mandatory retrieval of every carcass and gut pile.

5.6 Population estimation: what Nepal can and cannot afford

Section 12 of the Act requires census-based quotas [16], and any defensible offtake needs a population estimate. The costs are known. A comparison of three methods on a US site produced [144]:

Method	Cost per study area	Precision
Camera trapping (20 cameras, ~1.3/km ² , 11–12 days)	~USD 10,500	Cheapest, but “large variances”; spatial capture-recapture models failed where recaptures were insufficient
Removal sampling (10 traps, 18 days)	~USD 15,000	Imprecise below 15 days of trapping
Faecal DNA (4 transects, 6 occasions)	~USD 17,700	Best precision; 71 per cent of labour is laboratory work

The cheapest defensible method is the least precise, and it costs around USD 10,500 for a single study area [144]. A national wild boar estimate at defensible precision would run into hundreds of thousands of dollars. Camera-trap precision is typically 20–40 per cent coefficient of variation, which means **a 20 per cent cull cannot be distinguished from a 40 per cent cull by the monitoring Nepal could afford.**

For macaques, total counts of discrete troops at sleeping and feeding sites are the standard method and are more tractable, which is what the current national census is using with a five-count replicate design [62].

The conclusion for policy is important. Nepal should not build a management system that depends on absolute population estimates it cannot produce. It should manage against **damage** — parcel-level damage surveys, relief claim rates, and yield loss in monitored plots — which is cheaper to measure, more directly relevant to the farmer, and legally sufficient under a derogation model that asks whether serious damage is occurring rather than how many animals exist [45].

5.7 Disease, food safety, and why culled meat must not be distributed

African swine fever is established in Nepal. Between 2022 and 2025 there were 48 confirmed outbreaks with 17,005 officially reported pig deaths at a case fatality rate of 92.91 per cent; actual deaths are estimated at around 70,000. The national pig population fell 14.5 per cent, pork production fell 9.8 per cent, and direct economic loss is put at about USD 20 million, with Koshi Province worst affected [31, 145]. **ASF was confirmed in a wild boar carcass at Shuklaphanta National Park in February 2023**, with epidemiology suggesting spillover from nearby infected domestic pigs [32]. India has had ASF since 2020 across 24 states; Bhutan has reported it in both domestic pigs and wild boar [146].

This has three consequences for a culling programme. Mass drive hunting is now widely understood to disperse infected animals and to spread the virus through contaminated boots, vehicles and gralloch [33, 34]. Any programme must have a carcass protocol: search, recovery, deep burial or incineration, and operator biosecurity [34, 111]. And a culling programme designed without those elements could make Nepal's pig-sector epidemic worse rather than better.

Trichinellosis is the reason culled boar meat must not be distributed. The nearest ecologically comparable population — the Indian mid-hills of Garhwal — has had repeated human outbreaks from undercooked wild boar meat, including an outbreak between 2008 and 2011 with 42 patients and **11 deaths**, and a community feast outbreak affecting 54 people. India “lacks formal legislation for trichinellosis prevention and control” and inadequate meat inspection is identified as the central problem [39].

Nepal has no game meat inspection system. The Animal Slaughterhouse and Meat Inspection Act, 2055 [37] is implemented in **three cities** — Hetauda, Butwal and Surkhet — out of 753 local units, implementation began ten years after enactment, and the Department of Livestock Services has neither a designated enforcement body nor an implementation unit [38]. There is therefore no institutional pathway by which culled wild boar meat could lawfully be inspected and distributed. Under the current declarations, meat may in any case only be consumed locally after documentation and payment of the weight-based value, and commercial sale and transport are prohibited [56].

Macaque handling carries a different and sharper risk. Herpes B virus (*Macacine alphaherpesvirus 1*) is carried by most adult macaques and has a case fatality rate of about 70 per cent in untreated humans. Transmission is by bite, scratch, mucosal splash, or contact with brain, spinal cord or skull material — which is directly relevant to anyone handling a shot animal or performing a head shot. There is no vaccine [147, 148]. Macaques also carry tuberculosis, which runs in both directions [148], and macaque bites are a recognised rabies post-exposure driver in Nepal, where around 35,000 people receive prophylaxis a year [149].

There is a difficult interaction here. The AVMA lists gunshot as a conditionally acceptable method for swine but does not list it for non-human primates, for which the only acceptable method is injected anaesthetic overdose by a veterinarian [83, 150]. That is the route that maximises handler contact and therefore Herpes B exposure. AVMA's free-ranging wildlife section does accept firearms where animals cannot be controlled, but it offers no species-specific field protocol for macaques [83]. **The practical conclusion is that there is no field-scalable killing method for macaques that satisfies both international veterinary standards and operator safety.** This is an independent argument against macaque culling, separate from the efficacy argument.

Recommendation: the programme should assume that all carcasses are destroyed, not used. That removes the food-safety exposure and the vulture exposure at the same time, and it removes the “meat for the community” argument that will be raised politically. It also removes any incentive to over-kill.

6. The Socio-Economic Assessment

6.1 The relief system is the real failure, and it is fixable

Nepal already has a compensation instrument: the **वन्यजन्तुबाट भएको क्षतिको राहत वितरण निर्देशिका, २०८० (Wildlife Damage Relief Distribution Guideline, 2080)**, approved 17 July 2023 [51]. It covers 16 species, and the 2080 version added **all monkey species** to a list that has included wild boar since 2072 [63, 151]. Crucially, the 2080 version decentralised claims to the 84 Divisional Forest Offices, which is what makes mid-hill damage claimable at all [151].

Payable amounts [51, 50, 63]:

Category	Amount (NPR)
Human death	1,000,000
Serious injury	200,000
Permanent disability	500,000 (<i>one source says 600,000 — verify</i>)
Minor injury	20,000
Large livestock	up to 60,000 per animal
Other livestock	up to 10,000 per animal
Standing crop	up to 10,000, once per seasonal crop
Stored grain	up to 10,000
House or shed	up to 20,000

Limits: a maximum of two claims per person per year; documented land ownership required, which excludes farmers on unregistered land; Nepali nationals only; payment by bank transfer within 30 days [51, 50].

What it actually delivers [63]:

FY	National relief paid (NPR)
2018/19	89,084,699
2019/20	107,135,920
2020/21	140,993,556
2021/22	172,802,460
2022/23	135,360,927

In 2022/23 the breakdown was: human death Rs 39.7 million, livestock Rs 50.2 million, **crop Rs 26.2 million**, serious injury Rs 12.1 million, house Rs 4.2 million, **stored grain Rs 2.1 million**, minor injury Rs 0.9 million [63].

Crop and stored grain together come to about Rs 28.3 million a year nationally. Against an estimated national loss in the billions [57], that is a recovery rate well under one per cent. It is the single sharpest statistic in this note.

The administrative failure is documented:

- **Madhesh Province recorded 14,821 human-wildlife conflict cases between mid-July 2024 and mid-July 2025. Across two fiscal years, 101 people received relief. Exactly one claim was approved for wild boar damage [50].**
- Applicants must produce **twelve different document types** plus a ward recommendation, for a payment capped at Rs 10,000. As one researcher put it, “the relief money is spent just travelling back and forth to offices” [50].
- Divisional Forest Offices report receiving claims but no budget. The chief of Dhading Divisional Forest Office: “We receive a lot of calls every day seeking compensation for damages, especially by monkeys and leopards. But we have been unable to provide any compensation, as we haven’t received any budget from the province” [151].
- **Around 80 per cent of affected farmers do not know the scheme exists [58].**

The global evidence on compensation design is directly applicable. A review of 138 schemes across 50 countries, drawn from 288 publications between 1980 and 2015, found that only 21 per cent paid within one month, that fewer than 5 per cent of papers even defined what success would look like, and that the three most frequently recommended reforms are making payment **conditional on the claimant using a damage-prevention measure**, moving toward **performance-based payments**, and **paying faster**. The five criteria for an effective scheme are prompt and fair payment, clear rules, sufficient and sustainable funds, site specificity, and quick and accurate verification [52]. Nepal currently fails on payment speed, funding flow, and verification cost.

India is worth watching here: wild animal attacks are being folded into the national crop insurance scheme from Kharif 2026 rather than run as a standalone compensation fund [152]. Nepal’s own Wildlife Risk Insurance Policy, launched 17 July 2026 at a Rs 1,500 premium covering 18 species including crops, is a step in the same direction and is explicitly described as a pilot [72].

6.2 The cultural dimension is not a footnote

In 2023 officials drafted proposals to classify both wild boar and rhesus macaque as harmful to agriculture. **Monkeys were removed from that list on religious grounds** — which is why the macaque declaration waited until 2025 [5]. That is not an obstacle to be engineered around; it is a fact about the country the policy must operate in.

Himachal Pradesh demonstrates the practical consequence. The vermin declaration covered 93 tehsils and produced five dead monkeys [18]. Nobody was willing to shoot them. What Himachal did instead, and continues to do regardless of the animal’s legal status, is sterilise them [41].

The same asymmetry should be expected in Nepal. Wild boar culling is culturally feasible in most communities and boar meat is consumed [56]. Monkey culling is not, in most of the hills. A policy that treats the two species identically will find that one half of it simply does not happen — while still absorbing the political cost of having proposed it.

There is a second cultural risk. A permissive legal signal without a working legal channel produces illegal killing: around 100 monkey carcasses were found near Shimla in a single year, attributed to farmer poisoning [101]. Nepal’s vulture population makes that outcome far more expensive here than it was there [36].

6.3 Labour, firearms and the delivery gap

Labour. The interventions with the best evidence — guarding, machans, fence maintenance — are labour-intensive [135, 136], and labour is exactly what the mid-hills have lost [5]. Local governments are already improvising: Phidim-4 allocated Rs 100,000 for monkey management; Kummayak-1 hired nine guards at Rs 16,000 each; Laligurans Municipality declared a public holiday so residents could drive monkeys off

farms. Arghakhanchi hired twenty guards and reports them ineffective, while roughly 1,700 residents migrate annually [61]. Any intervention that assumes free household labour will fail.

Firearms. The Arms and Ammunition Act, 2019 BS (1962) vests licensing in the Chief District Officer. Civilians may hold 12-bore guns, .22-bore rifles and air guns. The last published national total is 34,314 registered arms as of 2015, heavily concentrated in Kathmandu and among institutional holders; the Home Ministry has acknowledged it lacks comprehensive recent licensing data [49, 153]. **Arghakhanchi has four valid licences and the CDO states there is no legal provision to issue more** [17].

This is the binding constraint, stated by the licensing authority itself. A hunting-licence regime in a district with four firearms is a notice, not a programme. Kerala's experience shows the same collision between wildlife authorisation and firearms licensing at a far larger administrative scale [21].

Institutional capacity. No professional or commercial wildlife control organisation exists in Nepal. The Nepal Army deploys 9,046 personnel for wildlife and forest protection, across twelve national parks, one wildlife reserve and one hunting reserve — inside the protected area system [91]. The boar and macaque problem is overwhelmingly outside it, where the state's field presence is 84 under-funded Divisional Forest Offices [151]. That structural mismatch has to be named and fixed, or nothing else in this note will be delivered.

6.4 Cost-benefit, honestly stated

Nepal cannot currently produce a defensible national cost-benefit calculation, because it has no national loss estimate and no population estimate. What can be said:

- The state currently pays about **Rs 28.3 million a year** in crop and grain relief [63].
- The FY 2083/84 budget allocates **Rs 411.1 million** to a new Human–Wildlife Coexistence programme, roughly a threefold increase [54].
- Effective lethal control of one confined boar population in Hong Kong cost **USD 13.5 million over four years** [113].
- Electric fencing costs USD 9,000–10,800 per km to install and USD 1,100 per km per year to maintain. A review of Kenyan schemes found the annual maintenance cost of electric fencing **exceeded** the cost of the crop raiding it prevented [134]. Fencing must therefore be targeted at high-value, high-damage, favourable-geometry sites, not distributed as a universal entitlement.
- Nepal's own 17 km solar fence at Bahundangi, Jhapa, installed in 2015 against elephants, cut conflict incidents 96.1 per cent and crop losses 93 per cent, against a pre-fence household loss of about USD 103 a year. The evaluation also recorded poor maintenance, with sections overgrown by grasses and climbers, “questioning its sustainability” [44].

That last point is the general lesson. In every fencing programme reviewed for this note, the failure mode was maintenance, not design [44, 134, 53]. Any Nepali fencing programme must budget recurrent maintenance from the start and assign it to a named body with a budget line, or it will buy an asset that stops working in its third monsoon.

7. Recommended Pathway for Nepal

7.1 The framing decision that everything else follows from

Nepal should adopt damage reduction, not population reduction, as the statutory and programmatic objective.

The reasons are set out above and can be restated in one paragraph. Nepal cannot achieve the 55–70 per cent annual offtake that would reduce a wild boar population [22, 23], cannot measure whether it has [144], and would face compensatory reproduction and immigration if it tried [25, 24]. For macaques, partial removal

disperses troops and spreads the problem [28, 30]. Meanwhile, barriers, guarding and a functioning relief system reduce damage immediately and regardless of how many animals exist [43, 44, 135]. A statute that asks “is serious damage occurring and has everything else been tried?” is answerable with data Nepal can actually collect. A statute that asks “how many animals should we remove to bring the population to target?” is not.

This reframing also aligns Nepal with GBF Target 4, which speaks of managing human-wildlife *interactions* for coexistence [9], and it makes every subsequent element defensible in court and at COP.

7.2 Recommendation A — Replace the annual Rule 36 declaration with a conditional derogation regime

The current instrument is a blanket, nationwide, unconditional annual permission [11, 13]. Replace it with a conditional regime built on the structure that has survived legal challenge everywhere it has been used — EU Habitats Directive Article 16 [45], Bern Convention Article 9 [7], and the US double-crested cormorant permit rule [46].

Cumulative conditions. Lethal control may be authorised only where **all** of the following are established:

1. **Serious damage.** Damage of genuine significance to crops, stored grain, livestock or property is occurring or is imminent, evidenced by a documented damage assessment for the specific area [45].
2. **No satisfactory alternative.** Non-lethal measures appropriate to the site have been tried and have failed, or are demonstrably unavailable. The applicant bears the burden of showing this [45, 46].
3. **No detriment to the population.** The authorisation will not be detrimental to maintaining the species at a favourable conservation status in its natural range [45, 7, 8].

Structural elements.

Element	Provision
Authorising officer	A named officer — the Divisional Forest Officer for areas outside protected areas, the Chief Conservation Officer within them — acting on a written recommendation from a Damage Assessment Committee, and subject to provincial-level oversight [46]
Numeric authorisation	Every authorisation states the maximum number of animals, by species, sex and age class where relevant, and its geographic and temporal limits. No open-ended permissions [46]
Method specification	The authorisation names the permitted methods. Anything not named is prohibited [46]
Operator	Only the Wildlife Damage Control Service (Recommendation C) or a person specifically named in the authorisation
Carcass	Every animal killed is Government property and must be disposed of by deep burial or incineration under supervision. No sale, no transport, no commercial use, no export [85, 34]
Return	A dated return within seven days of the operation recording species, sex, age class, weight, GPS location, method and disposal, signed by the operator and the ward representative. Failure to return voids future eligibility [46]
Publication	The Ministry publishes an annual consolidated report of all authorisations granted and all animals taken, by district and species [7, 46]
Duration	Authorisations issued for up to a season, within a standing three-year framework rather than an annually renewed Gazette notice, so that investment and training are possible

Two provisions to import directly. From India's Section 11(3): the carcass is Government property, which removes the commercial incentive to over-kill [85]. From the Indian Supreme Court's 2016 caveat: killing is permitted where the animal has entered cultivated land or human habitation, **not in the forest** [102]. Nepal's current declarations already do the second [13]; the first should be added explicitly.

Amendment route. This can largely be achieved by amending the National Parks and Wildlife Conservation Rules, 2030 — replacing Rule 36 with a substantive derogation provision and adding a schedule of conditions and forms — without amending the Act. Section 10's existing proviso and Section 12's census-based quota principle both support the structure [16]. A formal drafting exercise under the Ministry's legal division should confirm whether any element requires primary amendment.

7.3 Recommendation B — Protect *Macaca assamensis* absolutely, and require species discrimination

Three provisions, all essential:

1. **State in the instrument** that the authorisation does not extend to *Macaca assamensis*, *Semnopithecus* langurs, *Sus salvanius*, or any Schedule 1 species, and that killing any of them remains an offence under Section 26 carrying five to fifteen years' imprisonment [16, 47].
2. **Make species identification a condition of the authorisation.** No individual may operate under an authorisation without completing a short field-identification course covering rhesus versus Assamese macaque and versus langur, and wild boar versus pygmy hog. The course should be delivered by the Division Forest Office and certified [29].
3. **Withdraw the general farmer permission for macaques.** The current declaration permits any farmer to kill a "red monkey" on private land without prior permission and without training [15]. Given the identification problem, that permission should be replaced with a right to **drive away and to capture and hand over**, with lethal action reserved to the authorisation regime. Farmers keep their Section 21 self-defence protection, which is unaffected [16].

This is the single change most likely to prevent a serious miscarriage of justice, and it costs almost nothing.

7.4 Recommendation C — Build a Wildlife Damage Control Service

Nepal's problem is that it has authorised killing without creating anyone able to do it lawfully or competently [17, 91].

Establish a small professional service within the Department of Forests and Soil Conservation, initially covering the six pilot districts, structured as follows:

- **Staffing:** one team leader and four operators per district team, recruited from ex-service personnel, forest technicians and trained community members.
- **Firearms:** held under a **departmental authority**, not individual civilian licences. This resolves the Arghakhanchi problem, which cannot be resolved any other way [17, 49]. The Ministry should seek a specific provision with the Ministry of Home Affairs for departmental firearm holding by designated wildlife control officers.
- **Equipment:** corral and box traps as the primary tool [127], transport, cold storage where needed for disease sampling, protective equipment for macaque handling [147], GPS units and a reporting tablet.
- **Standing orders:** written standard operating procedures covering shot placement and calibre, the two-shot rule, verification of death [128, 82], trap check intervals, humane killing at the trap [129], biosecurity [34], carcass disposal, and the bite and splash protocol for macaque handling with 15–20 minute wound irrigation and pre-arranged access to rabies post-exposure prophylaxis and antiviral prophylaxis for Herpes B [147, 148, 149].
- **Deployment:** on written request from a local government, following a damage assessment, under a specific authorisation.

Indicative cost: six teams of five, salaried and equipped, is on the order of Rs 60–90 million a year including equipment amortisation, against the Rs 411.1 million already allocated to the Human–Wildlife Coexistence programme [54].

Two design points from the comparative evidence. **Pay the operators properly and salary them rather than paying per animal** — Japan’s programme runs on ¥13,000–23,000 per head [106] and Kerala’s collapsed at ₹1,500 [20], but a per-animal payment to a state service creates exactly the incentive Nepal should avoid [85]. And **do not build the programme on recreational hunters:** they select for large males rather than large females, cannot reach the required offtake, and become a constituency with an interest in the population persisting [26, 123].

7.5 Recommendation D — Prohibitions written into the instrument

The following should be prohibited in terms, not left to administrative discretion:

- **All toxicants, poison baits and chemical killing agents** for wildlife control, in any circumstances [35, 36, 141].
- **Lead ammunition.** Copper monolithic projectiles only, with mandatory retrieval of carcasses and gut piles [35].
- **Aerial shooting** in settled landscapes.
- **Night shooting** except within a defined, cleared operational area with a written risk assessment and prior notification to the ward.
- **Translocation of macaques** [132].
- **Snares, nets, explosives, electrocution and vehicle pursuit** [19, 21].
- **Any commercial sale, transport or distribution of carcasses or meat** [39, 38], and **any export of macaque specimens or derivatives** [10, 77].
- **Killing inside national parks, wildlife reserves, hunting reserves, conservation areas and national forest**, retaining the current geographic limitation [13].
- **Any operation inside a Vulture Safe Zone** without prior written clearance from the Department of National Parks and Wildlife Conservation [35].

7.6 Recommendation E — Fix the relief scheme before anything else

This is the intervention with the best ratio of benefit to political difficulty, and it is the one farmers will notice first.

Current	Proposed
12 document types plus ward recommendation [50]	One form , geotagged photographs, ward representative attestation
Rs 10,000 crop cap [51]	Retain the cap initially but index it and review after the pilot ; the binding problem is access, not the ceiling
No processing timeline in practice [50]	Statutory 30-day payment deadline with escalation to the provincial directorate on breach [52]
Budget does not reach Divisional Forest Offices [151]	Ring-fenced relief budget line transferred directly to each of the 84 DFOs at the start of the fiscal year , with quarterly reconciliation
Land ownership document required [51]	Accept ward attestation of cultivation where formal title is absent, so tenant and unregistered-land farmers are not excluded
No prevention requirement	Condition the second and subsequent claims on the claimant having a prevention measure in place, with the measure supplied or subsidised under Recommendation F [52]

80% of farmers unaware [58]	Mandatory ward-level publicity at the start of each cropping season, and a claim helpline
No national data	One national claims database , published annually, which also becomes the damage-monitoring system for the derogation regime [52]

That last point does double duty. The claims database is the cheapest damage-monitoring instrument Nepal can build, and it supplies the evidence base that the “serious damage” test in Recommendation A requires.

The Wildlife Risk Insurance Policy launched in July 2026 should be evaluated after one full season against these criteria and either scaled or wound up [72]. India’s decision to fold wildlife damage into its national crop insurance scheme from Kharif 2026 is the model to watch [152].

7.7 Recommendation F — Fund physical exclusion and community deterrence as the primary instrument

This is where the money should go.

For wild boar: solar-powered multi-strand electric fencing.

- Design: minimum four strands, lowest wire at 15–25 cm — below half the shoulder height of an adult boar — high tensile, 3,000 V or above, with soil grounding or metal-mesh grounding where terraces are dry or rocky [53].
- Deploy at **cluster scale**, not individual parcel scale. Nepali mid-hill terraces have a very unfavourable perimeter-to-area ratio; fencing a group of contiguous parcels through a community forest user group or farmer group is the only economic configuration [134].
- **Budget recurrent maintenance from day one** and assign it in writing. The Jhapa evaluation and every international review identify maintenance failure — vegetation shorting the low wires, gates left open, dead batteries — as the dominant failure mode [44, 136, 53].
- Target high-damage, high-value, favourable-geometry sites. Do not distribute as a universal entitlement; the Kenyan finding that maintenance cost can exceed the damage prevented is a real risk [134]. India’s Himachal Pradesh runs a 70 per cent subsidy scheme across four fence types and is the nearest administrative model [154].

For macaques: the mesh-plus-electric design.

The only published complete-exclusion result for macaques is the Japanese design: **nine electrified wires of 0.9 mm at 3,600–6,800 V, on insulated fibreglass poles at 2.5 m intervals, to 1.7 m height, with 45 mm nylon mesh netting covering the full height**. In field trials it excluded Japanese macaques entirely, along with wild boar and sika deer — inside the fences 0–3 animals were recorded against 60–327 outside [43]. The netting, not the wire, is what stops the macaques.

This should be piloted in three sites in the first pilot year, with costs measured, because the cost per protected hectare is not published anywhere and Nepal will need its own figure.

Community deterrence. Fund **paid** guarding rosters and machan construction through local governments — the Bardia evidence ranks machans plus group shouting and flaming sticks as the most effective method across all wildlife [135], and the Chitwan evidence ranks shouting, natural fencing and crop guarding above scaring devices and barbed wire [155]. Global synthesis finds the strongest combinations are fencing plus guarding and guarding plus early warning [136]. Evidence from Barbary macaques that pre-emptive deterrence at the field edge works better than confrontation inside the crop should shape how rosters are organised [156].

What not to fund as policy. Chilli deterrents, noise devices, reflective tape and AI alerting systems all habituate or depend on a farmer being present to respond [134, 137]. Nepal’s AI macaque detection prototype

reaches about 88 per cent accuracy across 28 field trials and its own developers name the fatal constraint: labour shortages mean farmers cannot respond to the alerts [138]. Fund it as research. Do not present it as a solution.

7.8 Recommendation G — Sustained fertility control for macaques

This is the only intervention with a demonstrated population-level result in a macaque population anywhere, and Nepal has already started [70].

The Diktel pilot in Khotang — a two-year study agreed in March 2026 between the Ministry of Agriculture and Livestock Development, the municipality and Tribhuvan University’s Central Department of Zoology — should be resourced properly and its protocol extended to the pilot districts [70].

Design parameters from Himachal and Hong Kong:

- **Technique:** endoscopic tubectomy for females and thermo-cauteric vasectomy for males, preserving hormones and social rank; same-day release where possible, as Hong Kong does [41, 40].
- **Target the females.** A single intact male can service a troop, so male sterilisation is demographically weak unless coverage approaches total. Female coverage is what moves the birth rate [40].
- **Coverage matters more than throughput.** Hong Kong took the birth rate from 60 to 30 per cent in a population of about 2,000 [40]. Himachal reached roughly half of its population over fourteen years with eight dedicated centres and a capital cost of about Rs 77.5 million [41].
- **Pair it with a feeding ban.** Hong Kong’s programme works alongside a statutory prohibition on feeding wild macaques [40]. Nepal should legislate the same for urban and temple troops, with an enforceable penalty, and should regulate waste management at the sites that provision troops.
- **Be honest about the timescale.** This is a fifteen-year instrument, not a five-year one, and a sterilised macaque raids crops exactly as before. Fertility control reduces the population over time; it does not reduce damage this season. It must run alongside exclusion, not instead of it.

Cautions. Himachal’s own causal claim is confounded by census methodology changes and simultaneous vermin declarations, and there is no published controlled evaluation attributing the decline to sterilisation [41, 42, 101]. A Nepali official delegation concluded that the Himachal model was prohibitively expensive for Nepal [5]. Nepal should therefore design its programme as an evaluated intervention with welfare standards written in, and should obtain the Himachal Forest Department’s own post-sterilisation population report before committing.

7.9 Recommendation H — A three-year, six-district paired pilot

Do not roll any of this out nationally. Design it as an evaluation from the start, which is what the CBD’s own guidance on adaptive management requires [75] and what the global compensation review says such programmes almost never do [52].

Site selection. Six districts spanning the affected range and the two species, drawn from those already identified: Arghakhanchi, Gulmi, Palpa, Salyan or Dailekh, Tehrathum or Dhankuta, and one Madhesh or inner-Terai district for wild boar [61, 50]. Within each district, select paired wards — treatment and control — matched on cropping pattern, forest edge length, out-migration rate and baseline damage.

Treatment package.

Layer	Content
1. Prevention	Cluster-scale solar electric fencing for boar; mesh-plus-electric trial plots for macaques; paid guarding rosters and machans [43, 53, 135]
2. Relief	The simplified claim system under Recommendation E, operating in both treatment and control wards

3. Fertility control	Macaque sterilisation in three of the six districts, on the Diktel protocol [70, 40]
4. Lethal control	Wildlife Damage Control Service, corral trapping and targeted shooting for wild boar [127], and for identified crop-raiding macaque troops only where the derogation conditions are met [28], in three of the six districts

The four-layer structure with sub-district allocation allows the pilot to answer the question that matters: does adding lethal control to a prevention-plus-relief package reduce damage more than prevention plus relief alone?

Metrics — all measured in both treatment and control wards, baseline and annually:

- Parcel-level crop damage as a share of production, from a fixed sample of monitored plots.
- Relief claims filed, approved and paid, and days to payment.
- Area cultivated and area newly abandoned [60].
- Animals taken, by species, sex and age, with disposal verified.
- Macaque troop counts and, in fertility-control districts, infant-to-female ratios [62].
- Human injuries and operator incidents.
- Non-target mortality, including a specific vulture watch [36].
- Cost per hectare protected and cost per unit of damage avoided.

Governance. The existing fifteen-member technical task force on human-wildlife conflict, formed on 19 May 2026, should be given the pilot as its delivery mandate [71]. An **independent evaluator** — a university consortium not involved in delivery — should be contracted at the outset. Results should be reported to the relevant parliamentary committees quarterly, which is what the August 2026 motion demands [3, 4].

Stopping rule. State it in advance. If, after two full cropping years, the lethal-control districts show no greater reduction in parcel-level damage than the prevention-and-relief districts, the lethal component is discontinued and the resources moved to prevention. Publishing that rule before the pilot begins is what makes the exercise credible rather than a search for justification.

7.10 Indicative budget

Component	Year 1	Years 2–3 (each)	Three-year total
Fencing and exclusion (6 districts, cluster scale)	250	200	650
Paid guarding and machans	40	40	120
Relief system reform, database, publicity	60	30	120
Macaque sterilisation (3 districts, incl. one centre)	80	50	180
Wildlife Damage Control Service (6 teams)	90	70	230
Monitoring, evaluation, census work	45	35	115
Training, SOPs, protective equipment, biosecurity	25	10	45
Total (NPR million)	590	435	1,460

Against the Rs 411.1 million allocated to the Human–Wildlife Coexistence programme in FY 2083/84 [54], this implies roughly a further Rs 180 million in the first year and Rs 25 million a year thereafter, or a reallocation from within the existing forestry budget. The figures are indicative and require costing by the

Ministry's planning division, particularly the fencing line, where no Nepali unit cost for the macaque design yet exists [43].

7.11 Sequencing

Phase	Period	Actions
Immediate (0–3 months)	Bhadau–Mangsir 2083	Compile and publish the data return from six years of Rule 36 declarations. Issue the species-identification restriction protecting Assamese macaque. Instruct DFOs on carcass burial compliance and vulture risk. Begin the Rules amendment drafting
Short term (3–12 months)	2083/84	Amend the Rules to the derogation model. Reform the relief guideline and transfer ring-fenced budget to the 84 DFOs. Agree departmental firearms authority with the Ministry of Home Affairs. Recruit and train the first Wildlife Damage Control Service teams. Select pilot districts and contract the independent evaluator. Complete the national macaque census and publish its methodology and limits
Medium term (1–3 years)	2084/85–2085/86	Run the pilot. Report quarterly to Parliament. Commission the forest-composition study on native food-bearing species. Evaluate the Wildlife Risk Insurance pilot
Decision point	end 2086	Independent evaluation published. Scale, modify or discontinue each of the four layers on the evidence, against the stopping rule

8. Risks and How They Are Managed

Risk	Assessment	Management
The reform is read as the Government refusing to act	High. The political demand is for visible killing [3]	Lead with what farmers will see: fences, paid guards, and relief that actually pays within 30 days. The derogation regime is more permissive in practice than the current one, because it creates operators who can lawfully act
Assamese macaques killed under a general permit	High under current arrangements [29, 47]	Recommendation B. Species restriction stated in the instrument, mandatory identification training, farmer permission for macaques limited to driving away and capture
Vulture mortality from carcasses or poisoning	High, and irreversible in reputational terms [36, 35]	Absolute toxicant prohibition; non-lead ammunition; supervised deep burial or incineration; Vulture Safe Zone clearance; a specific vulture mortality indicator in the pilot monitoring
African swine fever spread by control operations	Moderate to high [32, 31]	No drive hunts. Trap-based removal. Operator biosecurity protocol. Carcass recovery and destruction. Coordination with the Department of Livestock Services and disease sampling from a share of animals taken [34]

Human injury from shooting in settled terrain	Moderate. Unquantified in the literature — no evidence base on accident rates in culling operations in settled landscapes could be located, so this must be managed by protocol, not by reference to data	Daylight only; defined operational areas; backstop requirement; no-shoot zones near settlements and paths; ward notification; operator insurance; departmental firearms discipline [128]
Herpes B or rabies exposure among operators	Moderate, with a 70 per cent untreated fatality rate for Herpes B [147]	Full protective equipment for all macaque handling [148]; written bite, scratch and splash protocol; pre-arranged access to rabies PEP [149] and antiviral prophylaxis; TB screening of handlers; minimise handling by preferring exclusion over capture wherever possible
Illegal killing and poisoning increase	Moderate. Himachal saw about 100 poisoned monkey carcasses in a year alongside its vermin order [101]	A functioning legal channel is the main defence, together with enforcement, the relief system reducing desperation, and public communication that poison is prosecuted
Litigation or international criticism	Certain in some form. Every comparable programme worldwide drew a legal challenge or a convention complaint [102, 121, 118]	The derogation structure, published data returns, welfare standards adopted by reference [82, 83, 84], and the exclusion of protected species are precisely what makes a programme defensible. Nepal's CITES Category 2 status argues for completing the CITES rules in parallel [76]
Fencing assets fail in year three	High. This is the dominant failure mode internationally [134], and it was recorded in Nepal's own Jhapa evaluation [44]	Maintenance budgeted from day one, assigned to a named body with a budget line, with an annual inspection requirement and community maintenance agreements
The pilot is scaled before it reports	Moderate, given the political timetable	Publish the stopping rule and the evaluation contract at the outset. Report quarterly

9. Conclusion

The question put was whether Nepal should adopt culling, and how.

The legal answer is that Nepal may, that no convention prevents it [8, 10, 6], and that Nepal already has. Rule 36 declarations have been in force for wild boar since 2020 [12] and for rhesus macaque since 2025 [15]; Arghakhanchi issued hunting licences on 23 August 2026 [17]. Nepal does not need a new power. It needs to explain why the power it has produced almost no recorded result, and to fix that.

The technical answer is that culling at any intensity Nepal can achieve will not reduce wild boar numbers [22, 23, 24], and that partial macaque culling is likely to spread the damage rather than contain it [28, 30]. This is not an ethical claim; it is arithmetic drawn from four decades of population modelling, from Spain's fourteenfold increase in hunting bag alongside a growing population [26], from Japan's missed halving target [27], and from Himachal Pradesh's five dead monkeys [18].

The socio-economic answer is that the failure Nepali farmers experience most directly is not the absence of a culling law. It is a relief scheme that pays Rs 28 million a year against losses in the billions [63, 57], requires twelve documents for a Rs 10,000 claim, approved 101 payments against 14,821 reported conflict cases in one province [50], and is unknown to four fifths of the people it exists for [58].

What Nepal should do is keep lethal control, narrow it, professionalise it, and stop asking it to carry the policy. Put the money into exclusion and guarding, which reduce damage now. Put a long-term instrument — fertility control — behind the macaque problem, because it is the only thing that has demonstrably worked on macaques anywhere [40, 41]. Make the relief system function. Protect the Assamese macaque explicitly, before somebody goes to prison for fifteen years for a mistake the Government invited. And build the whole thing as a pilot with a control group, an independent evaluator and a published stopping rule, so that in three years Nepal can say something about what works that no country in this study has been able to say about its own programme.

The alternative — a national culling policy announced without operators, without disposal capacity, without monitoring and without a prevention programme behind it — will kill some animals, spend some money, generate litigation, endanger a recovering vulture population, and leave the hills exactly as they are.

Annex A — Species Legal Status at a Glance

	Wild boar <i>Sus scrofa</i>	Rhesus macaque <i>Macaca mulatta</i>	Assamese macaque <i>Macaca assamensis</i>	Pygmy hog <i>Sus salvanius</i>
NPWC Act Schedule 1 [47]	No	No	Yes	Yes
Current Rule 36 declaration	Yes (23 Feb 2026, one year) [13]	Yes (29 Magh 2082, one year) [15]	No	No
Rule 9 district hunting licence [11]	Yes, 2 animals	No	No	No
CITES [55]	Not listed	Appendix II	Appendix II	Appendix I
IUCN global	Least Concern	Least Concern	Near Threatened	Critically Endangered
Nepal national Red List [48]	—	—	Vulnerable	—
Penalty if killed unlawfully [16]	Rs 20,000–50,000 and/or 6–12 months	Rs 20,000–50,000 and/or 6–12 months	5–15 years, Rs 50,000–100,000	5–15 years, Rs 50,000–100,000
Recommended treatment	Lethal control available under derogation; primary tool corral trapping	Lethal control only for identified troops under derogation; primary tool fertility control plus exclusion	Excluded from all lethal authorisation	Excluded from all lethal authorisation

Annex B — Comparative Case Summary

Jurisdiction	Species	Legal basis	Scale	Result	Lesson for Nepal	Source
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Australia	Kangaroo	EPBC Act 1999 export approval plus state plans	Quota ~5m; actual take ~4% of a 36.5m population	Sustainable commercial harvest; quotas unmet	It is an industry, not a cull; the welfare code is the strictest in the world	[92, 95, 94]
Australia	Feral pig	State biosecurity law	240,000 removed in NSW in three years, AUD 40m	Populations at historic highs	80% control needed; partial effort achieves nothing	[96, 97, 98]
India (HP)	Rhesus macaque	WLPA s.62 vermin, 93 tehsils	5 monkeys killed	Failure of uptake	A permissive law nobody uses	[18, 85]
India (HP)	Rhesus macaque	Sterilisation programme, 8 centres	140,000+ sterilised; 317,512 (2004) → ~136,000 (2019)	The intervention that lasted	Fertility control outlasted the vermin order	[41, 42]
India (Kerala)	Wild boar	WLPA s.11(1)(b) devolved to local bodies	>5,000 culled 2022–25; ~250 shooters at ₹1,500 each	Shooter boycott, Feb 2026	Payment and shooter supply are the binding constraints	[19, 20, 21]
Japan	Deer, boar, macaque	2014 WPCMA amendment; ¥8,000 national grant plus top-ups	~1.2m animals a year; macaque cull >20,000	Halving target missed; macaque range +150%	Enormous, well-funded effort still failed	[27, 28, 106]
Spain	Wild boar	National hunting law	Bag 32,000 → 450,000 (1985–2022)	Population grew regardless	Hunting cannot outrun habitat change	[26]
Belgium	Wild boar (ASF)	EU animal health law	7,077 removed, 237 km fence, 60,631 person-hours, €300/ha	Disease eradicated in 26 months	This is what success costs	[111]
Poland	Wild boar (ASF)	National	200,000 target, 90% reduction sought	Scientific revolt, hunter refusal	Mass drive hunts spread ASF	[33]
UK	Badger	Protection of Badgers Act 1992 s.10 licences	247,880 killed since 2013; £1,311/animal in policing alone	Perturbation effect; policy shifting to vaccination	Partial culling displaced the problem	[121, 30, 157]
Hong Kong	Macaque	AFCD programme	Sterilisation since 2007	Birth rate 60% → 30%; population flat 16 years	The best macaque result anywhere	[40]

Hong Kong	Wild boar	Capture and kill from Nov 2021	~2,000 → ~990 in four years; HK\$105.6m	50.5% reduction; injuries –80%	USD 13.5m to halve one confined population	[113, 114]
Bhutan	Wild boar	Crop-defence killing allowance with Tshogpa attestation	Fencing scaling 87 km → 3,400 km, ~USD 60m	Money goes to barriers	The nearest cultural analogue chose fencing	[115, 116]
Sri Lanka	Toque macaque	Proposed export of 100,000	Cancelled by Attorney General, 26 Jun 2023	Collapsed on legality and CITES	The export route is closed	[117, 118]
Malaysia	Long-tailed macaque	State culling	97,119 (2012) + 68,413 (2013)	IUCN uplisted the species to Endangered in 2022	Mass culling can create a conservation problem	[119, 120]
United States	Feral swine	NFSDMP, 2014	USD 31.5m plus USD 75m Farm Bill pilot	11 of 41 states cleared, at the invasion front	Eradication works only where populations are new and small	[158, 159]

Annex C — Draft Conditions for a Lethal Control Authorisation

For adaptation by the Ministry's legal division into the amended Rules and the authorisation form. The structure follows Habitats Directive Article 16 [45], Bern Convention Article 9 [7] and 50 CFR §21.123 [46].

Part 1 — Eligibility. An authorisation may be issued only where the Damage Assessment Committee certifies in writing that: (a) serious damage to crops, stored grain, livestock or property is occurring or is imminent in the specified area; (b) non-lethal measures appropriate to the site have been implemented and have failed, or are demonstrably unavailable; and (c) the authorisation will not be detrimental to maintaining the species at a favourable conservation status.

Part 2 — Content of the authorisation. Every authorisation shall state: the species, by scientific name; the maximum number of animals, with sex and age class where specified; the precise geographic area, by ward and parcel; the period of validity, not exceeding one cropping season; the permitted methods, exhaustively listed; the named operator or operating unit; and the disposal requirement.

Part 3 — Excluded species. No authorisation extends to *Macaca assamensis*, *Sus salvanius*, any *Semnopithecus* species, or any species listed in Schedule 1 of the Act. Killing any such animal remains an offence under Section 26 [16].

Part 4 — Excluded methods. The following are prohibited in all circumstances: any toxicant, poison bait or chemical killing agent; lead ammunition; snares and nets; explosives; electrocution; pursuit by vehicle; aerial shooting; and night shooting other than within a defined operational area under a written risk assessment with prior ward notification.

Part 5 — Excluded places. No authorisation operates inside a national park, wildlife reserve, hunting reserve, conservation area or national forest, or inside a Vulture Safe Zone without prior written clearance from the Department of National Parks and Wildlife Conservation.

Part 6 — Competence. No person may operate under an authorisation without a current certificate of completion of the Department’s field course in species identification, humane killing, biosecurity and carcass disposal.

Part 7 — Carcass. Every animal killed is Government property. Every carcass and every gut pile shall be recovered and disposed of by deep burial or incineration under the supervision of a ward representative within twenty-four hours. No sale, transport, distribution, consumption or export is permitted.

Part 8 — Return. The operator shall submit a signed return within seven days of each operation, recording for each animal: species, sex, age class, weight, GPS coordinates, date, method, and manner of disposal, countersigned by a ward representative. Failure to submit a return voids eligibility for any further authorisation.

Part 9 — Publication. The Ministry shall publish an annual consolidated report of all authorisations issued and all animals taken, disaggregated by district and species, within three months of the close of the fiscal year.

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