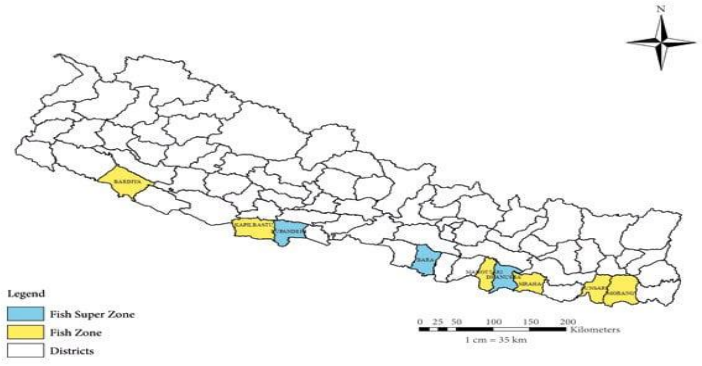
Comprehensive Report on Nepal's Fish Farming Practices and Fish Consumption: A National Aquaculture Assessment of Nepal.





1. Executive summary

Nepal has considerable potential for aquaculture development because of its diverse geography, freshwater resources, climatic zones, agricultural by-products, and growing demand for animal-source protein. However, Nepal's aquaculture industry is geographically uneven. Commercial fish farming is concentrated in the Terai and Inner Terai regions, while the Hill and Mountain regions have different opportunities, particularly cold-water aquaculture, trout farming, and niche production.

This report examines:

1. National fish production and aquaculture development.
2. Fish consumption and per-capita availability.
3. Province-wise and location-wise fish farming.
4. Highest- and lowest-producing areas.
5. Major cultured species and farming systems.
6. Production technologies, feeding practices, and constraints.
7. Aquafeed demand and commercial investment opportunities.
8. Recommendations supported by national and international references.

Important statistical distinction:

Fish production, aquaculture production, capture fisheries, fish availability, and actual fish consumption are different indicators. They should not be treated as interchangeable. The report distinguishes these wherever possible.

2. National fish production (latest available statistics)

The most important national sources are:

- Nepal's Central Fisheries Promotion and Conservation Center (CFPCC), Ministry of Agriculture and Livestock Development.
- Ministry's Statistical Information on Nepalese Agriculture.
- National Statistics Office (NSO), National Sample Census of Agriculture 2021/22.
- FAO and WorldFish research publications.

The official agriculture yearbook for Fiscal Years (FY) 2080/81 (2023/24) reports:

Indicator	Official reported figure
Aquaculture production	102,403 MT
Fish production from pond aquaculture	84,039 MT
Total fish production, including capture	109,639 MT
Per-capita fish production	4.12 kg/year
Per-capita fish availability	4.29 kg/year
Aquaculture households	69,842

The figures distinguish aquaculture from capture fisheries. Per-capita availability includes imports and is not a direct measurement of the quantity actually eaten by each person (**Statistical Pocket Book-Nepal 2024-Compressed-CDXHDWP|PDF|Nepal July 1, 2025 and Statistical period: FY 2080/81 (2023/24).**

2.1 Growth in pond aquaculture

Growth of Nepal's pond fish production **(Official CFPCC statistics, metric tons; selected fiscal years)**;

Fiscal Year	Production
2007/08	24.3K MT
2012/13	31.2K MT
2015/16	48.5K MT
2018/19	62.7K MT
2020/21	73.7K MT
2021/22	77.3K MT
2022/23	82.2K MT

Pond production increased from **24,295 MT in 2007/08 to 82,161 MT in 2022/23**, demonstrating substantial expansion in commercial freshwater aquaculture (**Statistics of fisheries and aquaculture in Nepal-cfpcc.gov.np**)

3. Highest and lowest fish production of Province in Nepal

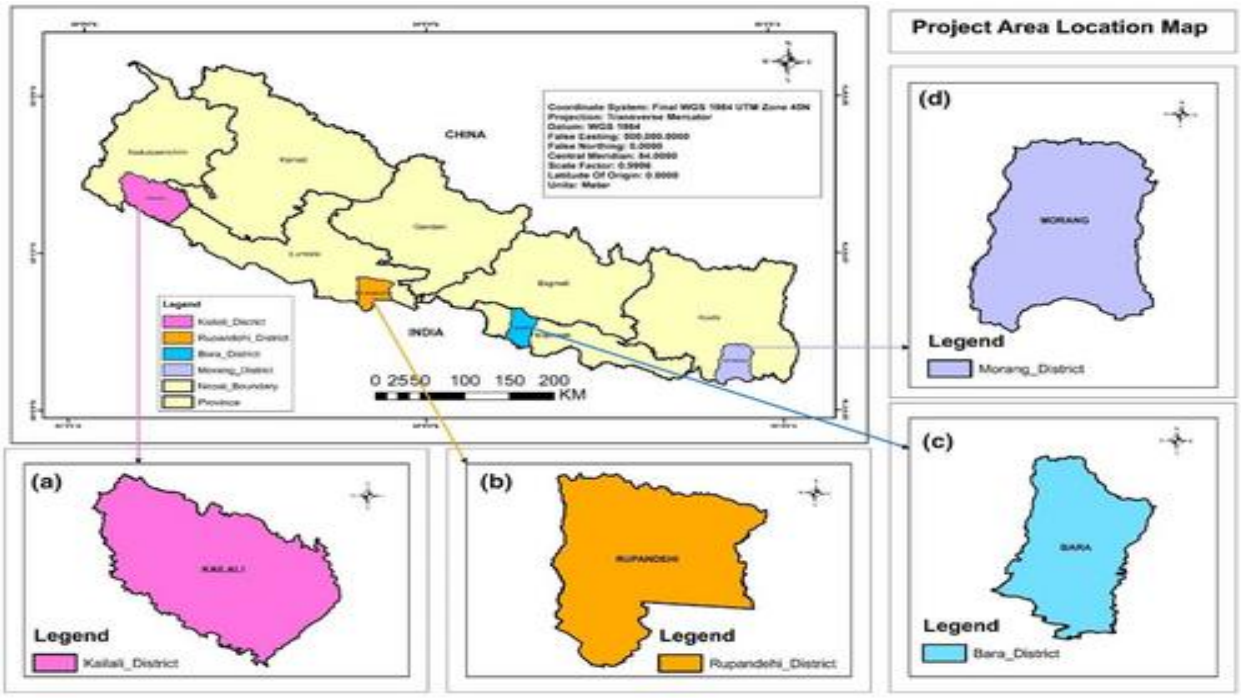
Highest: Madhesh Province and Lowest: Karnali Province and The following is the province-wise comparison of pond aquaculture production in FY 2080/81 (2023/24), using the **official CFPCC statistical series** as reported in the **Nepal Statistical Pocket Book 2024**.

Position	Province	Pond fish production (MT)
1	Madhesh	48,456
2	Lumbini	15,909
3	Koshi	9,378
4	Bagmati	5,423
5	Sudurpashchim	3,202
6	Gandaki	1,546
7	Karnali	126
Total		**84,039**

Source: Statistical Pocket Book-Nepal 2024-Compressed-CDXHDWP|PDF|Nepal July 1, 2025, Statistics of fisheries and aquaculture in Nepal-cfpcc.gov.np (FY 2080/81 (2023/2024)| Central Fisheries Promotion and Conservation Center Nepal Government.

Interpretation:

Madhesh produces approximately 57.7% of Nepal's reported pond fish production in this dataset. Karnali contributes approximately 0.15%. This is an important finding for aquafeed distribution, hatchery investment, fish farming services and commercial aquaculture expansion.



3.1 Updated production picture (FY 2081/82 (2024/25):

The latest Ministry of Agriculture statistics available for this assessment report is the pond fish production approximately 88,254 MT and Water surface areas 15,707 ha. The latest figures identify the following leading provinces and districts:

Location	Production
Madhesh Province	49,939 MT
Lumbini Province	17,138 MT
Koshi Province	10,235 MT
Bara district	11,957 MT
Dhanusa district	9,455 MT
Rupandehi district	7,358 MT

Source: Agriculture ministry: the farm statistics of FY 2081/82 and Statistical information on Nepalese agriculture, FY 2075/76-2081/82 (BS), 2018/19-2024/25 (AD)

Bara is the strongest identified district-level production centre. The figures above are from FY 2081/82, not the older 2023/24 provincial comparison. For the lowest-producing province, Karnali remains at the bottom of the latest

comparable provincial data. Its pond production was 126 MT in 2023/24, compared with 48,456 MT in Madhesh. The subsequent 2024/25 district table records approximately 133 MT for Karnali.

4. Location-wise aquaculture development in Nepal

Nepal's fish farming potential can be divided into three broad geographical zones, like as—

4.1 Terai region – major commercial aquaculture belt

Highest commercial potential and the Terai has relatively warm climatic conditions, extensive agricultural land, access to water, and established fish seed and marketing networks.

Important production locations:

- Bara.
- Dhanusa.
- Saptari.
- Siraha.
- Rautahat.
- Rupandehi.
- Kapilvastu.
- Morang.
- Sunsari.
- Jhapa.
- Kailali.

Common farming systems:

- Carp polyculture in earthen ponds.
- Semi-intensive aquaculture.
- Intensive carp farming.
- Tilapia farming.
- Pangasius farming.
- Rice-fish integrated farming.
- Fish farming with supplementary commercial feed.

The Terai is the strongest location for large-scale aquafeed distribution and commercial fish farming **(Aquaculture & Fisheries Nepal.pmd, March 13, 2008 and NACA| Status of aquaculture feed and feed ingredient production and utilization in Nepal).**

4.2 Hill region – medium-scale and specialized aquaculture

Specialized aquaculture potential and **important locations include:**

- Chitwan.
- Makwanpur.
- Kaski.
- Tanahun.
- Dhankuta.
- Ilam.

Major opportunities:

- Rainbow trout farming in cold, flowing water.

- Carp culture in suitable ponds.
- Cage culture in reservoirs and lakes.
- Commercial hatcheries and fingerling production.
- Premium fresh-fish and trout marketing.

Chitwan is particularly important because it combines established pond farming with access to major urban markets.

4.3 Mountain region – low-volume but specialized aquaculture

Limited conventional pond production and **important locations:**

- Mustang.
- Manang.
- Jumla.
- Dolpa.
- Humla.
- Mugu.

Challenges:

- Low water temperature for warm-water species.
- Shorter growing season.
- Limited transport and market access.
- High feed transportation costs.
- Limited hatchery and technical support.

Cold-water fish farming, particularly trout, is a more suitable opportunity in selected locations with reliable water flow and appropriate temperature. Low pond-fish production does not mean low potential for every type of aquaculture. Trout and other cold-water systems need to be assessed separately.






5. Major fish species cultured in Nepal

Species	Scientific name	Main farming application
Rohu	Labeo rohita	Carp polyculture
Catla (Bhakur)	Catla catla	Surface feeding carp
Mrigal (Naini)	Cirrhinus mrigala	Bottom feeding carp
Common carp	Cyprinus carpio	Pond culture
Silver carp	Hypophthalmichthys molitrix	Plankton-based culture
Grass carp	Ctenopharyngodon idella	Herbivorous carp
Bighead carp	Hypophthalmichthys nobilis	Plankton-based culture
Nile tilapia	Oreochromis niloticus	Warm-water intensive culture
Pangasius	Pangasianodon hypophthalmus	Intensive commercial culture
Rainbow trout	Oncorhynchus mykiss	Cold-water raceway culture

Carps dominate Nepal's established pond aquaculture. Research publications identify silver carp, common carp and mrigal among important contributors to production.

6. Major fish farming practices in Nepal

6.1 Carp polyculture

This is the traditional and most established commercial pond system.

The principle is to combine fish species with different feeding habits and pond-ecosystem niches.

Species	Main feeding zone
Catla	Surface
Silver carp	Surface/mid-water plankton
Rohu	Water column
Grass carp	Vegetation
Mrigal	Bottom
Common carp	Bottom

Benefits:

- Efficient use of natural pond food.
- Different ecological niches utilized.
- Multiple species can be harvested together.
- Suitable for semi-intensive farming.

6.2 Semi-intensive farming

This system combines natural pond productivity with supplementary feed.

Typical management includes:

- Pond preparation and liming.
- Organic and inorganic fertilization.
- Quality fingerling stocking.
- Supplementary feeding.
- Water-quality monitoring.
- Periodic biomass sampling.

6.3 Intensive farming

Intensive farming uses higher stocking density, formulated feed, and more rigorous water-quality management.
It requires:

- Reliable pellet-feed supply.
- Adequate dissolved oxygen.
- Aeration where required.
- Regular biomass estimation.
- Disease monitoring and biosecurity.

The use of aeration is particularly important when increasing stocking density.





6.4 Cage culture

Cage farming is suitable for selected lakes and reservoirs, subject to carrying capacity, environmental regulation, water quality and site suitability.

6.5 Rainbow trout raceway culture

This system uses continuous cold, clean, oxygen-rich water.
It generally requires:

- High-quality extruded floating feed.
- Consistent water flow.
- Temperature management.
- High dissolved oxygen.
- Frequent health monitoring.





6.6 Rice-fish integrated culture

Rice-fish culture is a potential method for combining rice production and fish production. However, its national contribution remains relatively small. **The 2023/24 official agriculture yearbook reports** 17 MT of production from 49 hectares of rice-fish culture. (**Source: www.krishisuchana.com; www.kathmandupost.com)**





7. Fish consumption in Nepal

Fish is an important source of animal protein, essential fatty acids, vitamins and minerals in Nepal. However, per-capita consumption remains relatively low compared with the world average.

7.1 Per-capita fish consumption comparison

The **2025 WorldFish-associated publication Unlocking Aquaculture Potential:** Strategic Pathways for Its Growth in Nepal reports:

Indicator	Nepal	Global average
Annual per-capita fish consumption	3.9 kg	20.7 kg
Daily equivalent	10.7 g	56.7 g
Annual difference	—	16.8 kg

(Source: Annual fish consumption per person, Kilograms per person per year; WorldFish-associated 2025 publication; hamrokhana.blogspot.com)

Interpretation:

- Nepal's reported consumption is approximately 18.8% of the global average.
- The difference is approximately 81.2%.
- Nepal has considerable potential to increase domestic fish consumption through sustainable aquaculture expansion.

The daily figures are annual averages divided by 365 days, not evidence that every person eats fish every day.




7.2 Fish consumption and availability: an important statistical distinction

There are two useful national indicators:

Source and measurement	Annual quantity
Ministry's FY 2080/81 per-capita fish availability	4.29 kg/person
WorldFish-associated 2025 consumption estimate	3.9 kg/person

The first is a production-plus-import availability indicator, whereas the second is reported as consumption. Different years and statistical methodologies also contribute to the difference. Neither should be interpreted as an exact measurement of each household's intake.

7.3 Fish consumption opportunities by market

The following is a commercial market assessment, not a measured ranking of provincial household consumption.

Market segment	Potential demand
Kathmandu Valley	Large urban retail and restaurant market
Madhesh	Strong regional fish production and consumption market
Chitwan	Farming, wholesale and retail market
Pokhara	Fresh fish and premium trout market
Biratnagar	Eastern Nepal's urban fish market
Butwal–Bhairahawa	Major western Terai market
Nepalgunj	Western regional distribution market
Mountain districts	Smaller, geographically dispersed markets

7.4 Fish supply gap

The 2025 WorldFish-associated study estimates Nepal's total fish supply from capture and aquaculture at 113,736 MT in 2023. It estimates that supply would need to exceed 600,000 MT to approach the global per-capita consumption average. This is a long-term theoretical supply benchmark, not a forecast of immediate market demand.

8. Fish feed and nutrition practices in Nepal

This section is particularly important for understanding the commercial aquafeed industry.

8.1 Existing feed practices

Nepal's aquaculture farmers use several feeding systems:

1. Natural pond productivity through plankton and benthic organisms.
2. Rice polish and oil cake mixtures.
3. Farm-made mash feed.
4. Commercial sinking pellets.
5. Commercial floating pellets.
6. Specialized extruded trout feed.

A NACA publication from 2017 reported that:

- Approximately 12,000 MT of aquaculture pellet feed was used at that time.
- Around one-third was imported from India.
- The remaining feed was manufactured locally.
- Around 60% of carp farmers used pellets or homemade supplementary feed.
- Approximately 40% of carp farmers, mainly small-scale, relied on natural pond productivity without artificial feed.

These are historical estimates from 2017, not current 2026 market measurements.

8.2 Feed requirements by species

The following are indicative formulation and management targets for commercial development, not official national feed standards.

Species	Feed type	Indicative crude protein
Rohu	Sinking/pellet	25–30%
Catla	Floating/sinking	25–30%
Mrigal	Sinking	20–28%
Common carp	Sinking/floating	25–30%
Silver carp	Supplementary feed as required	System-dependent
Grass carp	Plant-based diet plus supplementation	System-dependent
Tilapia	Floating pellet	28–32%
Pangasius	Floating pellet	26–30%
Rainbow trout	Extruded floating pellet	40–45%

Actual requirements should be adjusted for fish size, temperature, natural food availability, production intensity and feed digestibility.





8.3 Nutritional management recommendations

For a commercial farm, the following management approach is recommended:

Nutritional factor	Recommended approach
Protein	Match protein to species and growth stage
Lipid	Balance energy and essential fatty acids
Carbohydrate	Use digestible energy sources
Amino acids	Maintain lysine and methionine adequacy
Minerals	Maintain calcium, phosphorus and trace minerals
Vitamins	Provide appropriate vitamin premix
Pellet quality	Monitor durability and water stability
Feed conversion	Calculate FCR using actual biomass gain
Feed intake	Adjust to temperature and fish appetite

8.4 Important research and development opportunities

For Nepal's commercial aquafeed industry, the following areas deserve priority:

- Digestibility of locally available feed ingredients.
- Soybean meal and oilseed meal utilization.
- Rice DDGS and maize DDGS inclusion.
- Fermented plant-protein ingredients.
- Enzyme supplementation.
- Probiotics and postbiotics.
- Organic acid supplementation.
- Functional feeds for disease resistance.
- Winter nutritional management.
- Water stability of sinking carp feed.
- Floating feed expansion and extruder optimization.

9. Major constraints affecting Nepalese aquaculture

Constraint	Likely effect on production
Limited quality fingerlings	Poor growth and survival
Variable feed quality	Unpredictable FCR
High feed transportation cost	Increased production cost
Inadequate water-quality management	Stress and mortality
Disease and biosecurity weaknesses	Reduced survival
Limited technical training	Poor farm management
Seasonal temperature variation	Variable feed intake and growth
Limited cold-chain infrastructure	Post-harvest losses
Dependence on imported inputs	Price and supply risks
Limited market integration	Uncertain farm-gate prices

9.1 Geographic challenges

- Terai: flooding, excessive water temperature, water-quality fluctuations and seasonal disease pressure.
- Hills: variable water supply, limited suitable pond land and transport costs.
- Mountains: cold temperatures, shorter production seasons and expensive feed logistics.

The national research literature also highlights the need for better hatcheries, sustainable input supply, marketing, transportation, and storage and public–private investment.

Source:

- ✓ **Unlocking Aquaculture Potential: Strategic Pathways for its Growth in Nepal, January 1, 2025**
- ✓ **An Overview of Status and Development Trend of Aquaculture and Fisheries in Nepal-Dhakal-2022-Advance in Agriculture, September 22, 2022**
- ✓ **NACA | Status of aquaculture feed and feed ingredient production and utilization in Nepal, march 7, 2017**

10. Aquaculture business and investment opportunities

Based on the production geography, there are several commercially attractive areas.

Priority commercial aquaculture locations

1. Bara – Madhesh Province: Largest identified district-level pond production. Strong candidate for aquafeed distribution, dealer development and farmer services.

2. Dhanusa – Madhesh Province: Strong pond production and opportunity for hatchery, nursery and feed distribution networks.

3. Rupandehi – Lumbini Province: Major western Terai fish-producing centre with commercial aquaculture and distribution opportunities.

4. Morang–Sunsari–Jhapa – Koshi Province: Suitable regional cluster for commercial carp farming, feed supply and hatchery services.

5. Chitwan – Bagmati Province: Suitable for commercial fish production, feed distribution and technical demonstration farms.

10.1 Recommended aquafeed manufacturing strategy

For a new commercial aquafeed business, I would prioritise three product categories:

Product category	Target market
Carp sinking feed	Largest established pond-farming segment
Carp floating feed	Commercial and intensive carp farms
High-protein extruded feed	Pangasius, tilapia and trout farms

A regional distribution strategy should begin in Madhesh, followed by Lumbini and Koshi. A local manufacturing investment should be supported by a proper district-wise farmer survey, feed consumption assessment, competitor price analysis, and ingredient procurement study and dealer network assessment.





11. Strategic recommendations for Nepal's aquaculture industry

Based on the national statistics and international research, I recommend the following priorities.

Priority	Recommended action	Expected benefit
1	Improve carp polyculture productivity	Higher production per hectare
2	Develop commercial sinking feed	Better supplementary nutrition
3	Expand floating feed adoption	Improved feeding control
4	Improve hatchery and nursery facilities	Reliable fingerling supply
5	Develop Pangasius and tilapia farming	Species diversification
6	Develop trout farming	Premium-value fish production
7	Introduce farm-level FCR monitoring	Improved profitability
8	Strengthen fish health management	Better survival
9	Develop cold-chain and processing	Reduced post-harvest loss
10	Improve farmer training	Better technical management

11.1 Recommended geographical development model

Commercial development priorities:

- ✓ Madhesh: Commercial carp farming, feed manufacturing and distribution: Priority 1
- ✓ Lumbini: Carp production, intensive farming and distribution: Priority 2
- ✓ Koshi: Carp, tilapia, hatcheries and trout: Priority 3
- ✓ Bagmati and Gandaki: Commercial pond farming, trout, cages and premium markets: Specialized development
- ✓ Karnali: Infrastructure, fingerling supply, suitable cold-water systems and technical support: Long-term development

12. Final findings

The most important conclusions from this assessment are:

1. Madhesh Province is Nepal's leading pond aquaculture region.
2. Bara is the leading identified district for pond fish production, with 11,957 MT in FY 2081/82.
3. Karnali is the lowest-producing province in the latest comparable provincial series, although it has potential for specialized cold-water aquaculture.
4. Carp polyculture remains the foundation of Nepal's commercial pond aquaculture.
5. Fish consumption is relatively low, at approximately 3.9 kg/person/year according to the 2025 WorldFish-associated publication.
6. Better feed quality, seed supply, water management and farm productivity are important development priorities.
7. The Terai offers the strongest initial commercial opportunity for aquafeed manufacturing and distribution.
8. Trout and specialized cold-water aquaculture offer additional opportunities in selected hill and mountain locations.

Statistical correction:

The official FY 2080/81 agriculture yearbook reports 102,403 MT from aquaculture practices, including 84,039 MT from ponds, and 123,403 MT total fish production including capture fisheries. The earlier 109,639 MT figure in the preliminary summary was incorrect.

Source: Year Book_2080_81_final.docx; Microsoft world, July 8, 2025

13. Overall assessment

Nepal aquaculture development outlook

Strong potential

Nepal has a substantial opportunity to increase domestic fish production, improve nutritional security and develop a commercially sustainable aquafeed industry.

- ➢ Most promising initial production region: Madhesh.
- ➢ Leading district: Bara.
- ➢ Strong secondary markets: Lumbini and Koshi.
- ➢ Specialized opportunity: Trout farming in suitable hill and mountain locations.
- ➢ Most important development requirement: Higher productivity through quality seed, balanced feed, improved farm management and reliable market access.

14. National and international references

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