IARC Impact in practice series
The Republic of Korea experience

***"What IARC brings is independent science, global comparability, and the credibility to turn evidence into action."* Jin Young Park, IARC Liaison Officer for Korea**

Since becoming an IARC Participating State in 2006, the Republic of Korea has used IARC as a strategic lever to connect national priorities to global cancer science, combining strong screening, cohort, and registry assets with independent international standards. Membership gives Korea both **influence**: a voice in IARC governance and priority-setting, and **reach**: access to multinational platforms that no single country could assemble alone, and evidence that strengthens public decision-making.

Why IARC membership made the difference for the Republic of Korea:

- **Scientific leadership and deeper integration in global research:** Over the past decade, Korean researchers have co-authored 139 oncology publications with IARC, typically in exceptionally large international consortia, spanning 2 041 institutions across 176 countries. This places Korean teams at the centre of high-impact, data-intensive research in areas such as GWAS, nutrition and obesity, screening and imaging, *H. pylori* and gastric cancer, environmental exposures, and gut microbiota.
- **Evidence that informs policy and regulation:** IARC evidence is not confined to journals. Analysis of Korean public-sector documents shows IARC work cited in around 20 policy and technical documents, where it supports cancer-burden assessments, infection-related cancer prevention, environmental and occupational hazard regulation, food and nutrition policy, and governance frameworks for human tissue biobanks.
- **Global infrastructures that turn Korean assets into decision-ready evidence:** Through IARC, Korea's trials, cohorts, and laboratory platforms are embedded in shared international research infrastructures. These include the HELPER randomized trial and cost-effectiveness modelling on *H. pylori* eradication, Korean-funded projects on plant-based diets, metabolomics, and gut microbiota, and biomarker studies such as serum bilirubin and colorectal cancer risk. Together, they turn national investments into global public goods for cancer prevention.
- **Capacity and standards:** Korean fellows, trainees, and expert contributors to IARC Monographs, Handbooks, and WHO tumour classifications have built a durable talent and standards pipeline between Korea and IARC. Together with NCC Korea's role as an IARC/GICR Collaborating Centre for cancer registration in Asia, this ensures that Korea not only benefits from international standards for cancer research, surveillance, and control, but also helps shape them for the region and beyond.

Part I. Scientific leadership through international collaboration

➔ Exceptional intensity and depth of collaboration

The Republic of Korea's partnership with IARC is a highly integrated one, connecting Korean institutions to large, coordinated international cancer studies. This is clear in the publication data. Over the past decade, Korean researchers co-authored **139 oncology papers with IARC**[1]. What stands out is not only the number of papers, but how they are produced: Korea–IARC papers involve a **median of 80 institutions per publication**, compared with just **2 institutions** in Korean oncology papers without IARC involvement. This is one of the highest levels of collaboration intensity among IARC Participating States.

Web of Science micro-topic analysis shows that Korea–IARC outputs are strongly concentrated in high-impact, data-intensive areas, led by:

- **Genome-wide association studies (GWAS) and genomic susceptibility research;**
- **Genetic testing and molecular diagnostics;**
- **Nutrition, obesity, and metabolic/cardiometabolic risk**, including plant-based dietary patterns, metabolomics, and hypertension management;
- **Screening disparities, early detection, and breast cancer imaging;**

[1] Data derived from Web of Science records of IARC–Korea co-authored papers published between January 2016 and January 2026.

- **Infection-related gastric cancer research**, especially *Helicobacter* pylori (H. pylori)i;
- **Environmental and occupational exposures**, notably lead and cadmium toxicity, and related oxidative-stress pathways;
- **Gut microbiota and diet–microbiome–metabolome interactions.**

➔ **Leadership in global research infrastructure**

Through IARC, Korean institutions participate in and help shape major international research infrastructures. These collaborations embed Korea's cohorts, biobanks, and public-health programmes in multi-country platforms with shared protocols and pooled analyses, with IARC further contributing to the visibility and scientific rigour of these initiatives.

Cancer in the Republic of Korea: a high-incidence burden in an ageing population

Based on GLOBOCAN 2022 estimates, cancer is a major public health challenge in the Republic of Korea, with about **238 000 new cases and 98 000 deaths in 2022**. Incidence is high, reflecting rapid population ageing, intensive use of imaging and endoscopic screening, and continued exposure to modifiable risk factors. The leading cancers include **lung, colorectal, and stomach**, with **breast and thyroid cancers** also prominent. Together, these patterns point to the need for continued action on tobacco control, diet and obesity, infection prevention and management, and the optimisation of early-detection strategies to minimise overdiagnosis and costs while maximising lives saved.

- **Gastric cancer prevention within the national screening programme:** The National Cancer Center (NCC) Korea and IARC co-lead the **HELPER randomized trial**, embedded in the National Gastric Cancer Screening Program, to test whether H. pylori eradication can reduce stomach cancer incidence. (see Box #3) A companion IARC–NCC Korea study evaluates the effect of *H. pylori* screening and treatment and implementation outcomes at population scale, providing decision-ready evidence for future "*H. pylori* screen-and-treat" strategies.
- **Diet, plant-based patterns, and multimorbidity of cancer and cardiometabolic disease:** A Korean Research Foundation-funded project with IARC links plant-based dietary indices to the combined risk of cancer, cardiovascular disease, and type 2 diabetes, using biomarker-rich data from the **European Prospective Investigation into Cancer and Nutrition (EPIC)**, UK Biobank, and Korean cohorts. It aims to develop objective metabolite and proteomic markers of healthy plant-based diets and to assess how diet-related changes in the gut microbiome translate into multimorbidity risk. Looking ahead, both partners are exploring how Korea's expanding big-data and electronic health record infrastructures could be linked with IARC's methods and comparative platforms, opening new opportunities for research on early-onset colorectal cancer, metabolomics, and microbiome-related risk.

Box #2: Thyroid cancer and overdiagnosis: IARC-led evidence using Korean data

Using harmonised cancer registry data from 185 countries, including high-quality data from the Republic of Korea, an IARC-led study tracked thyroid cancer trends in adolescents and young adults since the 2000s. The findings are striking: incidence has risen steeply while mortality has remained stably very low, with Korea among the countries showing the fastest increases. This pattern points strongly to **overdiagnosis driven by intensive imaging and opportunistic screening**, rather than a true surge in life-threatening disease.

By placing Korean data in a rigorously standardised global comparison, IARC turns a national concern into clear international evidence. For Korea, this provides an independent basis for re-examining thyroid and other cancer screening practices; for other countries, it is a warning that expanding imaging-based early detection without careful safeguards can create substantial harm as well as benefit.

- **Food metabolome and gut-microbiota infrastructures for Korean diets:** Two Rural Development Administration-funded collaborations with IARC, one on the **food metabolome and dietary biomarkers in Korean blood and urine samples**, and one on the **effect of diet–gut microbiota interactions on metabolome and health parameters in Korean adults** integrate detailed dietary intake, microbiome, and metabolomics data with cancer- and metabolism-related biomarkers. Together they create a reference platform on diet–microbiome–health relationships that can be compared with similar datasets in Europe and other regions. This broader precision-prevention agenda also includes biomarker studies in large Korean cohorts, such as IARC-linked work showing that **higher serum bilirubin levels are associated with lower colorectal cancer risk**, pointing to new opportunities for risk stratification and prevention.
- New areas of collaboration are also emerging in **cervical cancer prevention**, including work on **AI-assisted detection tools** and the longer-term development of **data systems needed to evaluate vaccination and screening outcomes**.

➔ Shaping the global cancer research agenda and standards

Korean experts and diplomats help steer IARC's direction. Through seats on the **Scientific Council and Governing Council**, and active involvement in developing the Medium-Term Strategy (MTS), the Republic of Korea contributes directly to setting IARC's research and capacity-building priorities. This high-level engagement is a form of **soft power**. By shaping IARC's work programme, the Republic of Korea brings national and regional realities into global decision-making while gaining early insight into emerging priorities, methods, and partnership opportunities, aligning its own cancer plans and investments with cutting-edge international evidence.

The Republic of Korea also contributes to the development of widely respected international evidence frameworks, implementation guidance, and classification standards that shape global cancer science, prevention, and regulation. During the 2020-2025 cycle, 5 Korean experts have contributed to the IARC's flagship evaluations and guidance, including:

- **IARC Monographs Volume 133:** *Anthracene, 2-bromopropane, butyl methacrylate, and dimethyl hydrogen phosphite*
- **IARC Handbooks of Cancer Prevention Volume 21:** Lung cancer screening and early detection approaches
- **IARC Working Group Report No. 12:** *Population-based Helicobacter pylori screen-and-treat strategies for gastric cancer prevention: guidance on implementation*
- **World Health Organization Classification of Tumours (Blue Books) 5th and 6th editions:** Editorial board and expert contributions supporting international tumour classification standards, diagnostic criteria, and reporting systems across multiple organ systems

The partnership is also expanding into new areas, including occupational and environmental carcinogenesis, pathology classification, agricultural and environmental cohort studies, and data-intensive collaborations linked to Korea's growing research infrastructures.

Part II. From evidence to action: IARC's impact on national Public Health

➔ Evidence that informs national regulation and prevention policy

In the Republic of Korea, IARC-linked evidence in national disease-control reports, health-inequality analyses, food and nutrition studies, and legal or regulatory reviews, where it supports concrete decisions on prevention and regulation. An Overton analysis of Korean public-sector and policy documents identifies **around 20 government and think-tank reports (2008–2024)** with **more than 50 citation instances** of IARC-led or IARC-affiliated work, dominated by outputs from the Korea Disease Control and Prevention Agency (KDCA, formerly KCDC) and the Korea Institute for Health and Social Affairs, but also extending to economic, agricultural, maritime, finance, and legal institutes. Across these documents, IARC outputs are used to:

- **Benchmark cancer burden and risk factors for planning.** GLOBOCAN-based global cancer

Box #3: Targeting *H. pylori* to prevent stomach cancer: from trial evidence to national policy

"Our goal is not only to generate evidence on H. pylori eradication, but to use it to strengthen Korea's national cancer screening programme."
Jin Young Park, IARC Liaison Officer for Korea

The Republic of Korea and IARC are jointly testing whether eradicating *Helicobacter pylori* within a national screening programme can reduce one of the world's highest burdens of stomach cancer. The HELPER trial, led by the National Cancer Center Korea with IARC as scientific partner, is a large randomized study embedded in the National Gastric Cancer Screening Program: about **12 000 adults aged 40–65 years** are assigned to *H. pylori* treatment or placebo and followed for >10 years through routine biennial endoscopy. This makes HELPER one of the strongest real-world platforms yet for determining whether a *H. pylori* **screen-and-treat strategy** can work at population scale in a high-incidence setting.

IARC's added value is **scientific independence and quality assurance.** It helped design the study, established the independent data safety and monitoring board, supported protocol integrity, and carried out regular monitoring across the **12 participating university hospitals**.

Crucially, HELPER is designed not to stop at efficacy. Beyond the randomized phase, the platform is expected to evolve into an **implementation cohort**, generating evidence on feasibility, acceptability, treatment success, and established longer-term benefits and poten harms to support incorporation into the national cancer screening programme. Set against IARC's global modelling showing that East Asia, including Korea, will continue to carry a disproportionate share of the future gastric cancer burden without stronger prevention, HELPER positions Korea and IARC at the forefront of **evidence-based stomach cancer prevention** with implications far beyond Korea.

statistics and large multicountry mortality and risk-factor studies involving IARC are cited in analyses of changing mortality patterns, health inequalities, and COVID-19 health impacts, helping Korean agencies quantify the contribution of smoking, alcohol, obesity, and other risk factors to premature death and set prevention priorities.

- **Support other infection-related cancer prevention, especially HPV and biological agents.** KDCA technical reports on cervical cancer and infection-related carcinogens reference *IARC Monographs* and multi-country HPV studies on the carcinogenicity of human papillomaviruses and other biological agents, anchoring national guidance on cervical-cancer prevention and vaccination in independent international hazard evaluations.
- **Underpin environmental and occupational regulation.** Legal and regulatory studies use IARC Monographs on outdoor air pollution and on fibres such as fluoro-edenite and certain nanotubes when assessing new technologies, emissions, and worker protection, treating IARC hazard classifications as a reference point for Korean regulatory standards.
- **Inform nutrition and food-sector strategies.** The Korea Rural Economic Institute and other bodies draw on IARC-linked evidence from global burden-of-disease and diet-cancer research when analysing the vegetarian/plant-based food sector and sustainable agriculture, linking dietary patterns and obesity to long-term cancer and NCD risk in support of healthier food policies.
- **Shape governance frameworks for biobanks and health data.** Policy work on the management of human biological materials cites IARC-authored articles on human tissue biobanks and research infrastructures, using them as benchmarks when designing legal and ethical approaches to biospecimen use in Korea.

Part III. Building capacity for lasting impact

➔ Talent pipeline into international cancer science

Training and knowledge exchange are a central pillar of the Korea–IARC relationship. Since 1980, **four Korean scientists have held highly competitive IARC fellowships**, creating a cadre of researchers with first-hand experience of IARC methods, infrastructures, and networks. In the 2021-2025 cycle, **four trainees from Korean institutions have undertaken short and medium-term research attachments at IARC**, maintaining close links between Korea's cancer centres and international research teams. Capacity building also extends beyond early-career training: Korea has seconded senior Ministry of Health personnel to IARC, strengthening policy-level links between national institutions and IARC. Discussions are also under way on expanding this pipeline through additional exchange formats, including visiting scientists, doctoral researchers, and a possible joint Korea-IARC postdoctoral fellowship.

This engagement is part of IARC's wider capacity-building ecosystem, which includes the Postdoctoral Fellowship Programme, the IARC Summer School, the IARC Learning Platform, and global networks for cancer registries, screening and biobanking. Together, these initiatives train thousands of professionals worldwide and generate durable benefits: in a 2024 outcome survey, **98% of postdoctoral respondents reported transferable skills, 72% maintained research ties with IARC after training, and over half progressed to leadership roles (53%) or managed independent research funding (52%)**. This creates a **two-way multiplier effect**: expertise gained at IARC is reinvested in national institutions, while the priorities, data, and methodological strengths of participating countries feed back into IARC's networks, helping shape future research, standards, and capacity-building efforts.

➔ Scaling training across Asia: registries, data, and screening quality

Korea is also helping scale IARC's capacity-building reach across Asia by serving as a regional hub for cancer registration and data use. In 2018, NCC Korea was designated an **IARC/GICR Collaborating Centre** to support cancer registration in Asia, formalised through a dedicated Memorandum of Understanding. Within this role, NCC Korea and IARC run joint **summer schools on cancer registration**, providing intensive training on registry organisation, data collection, coding, quality control, and basic analysis for participants from multiple countries in the South, East and South-Eastern Asia Hub. Beyond training courses, this role also supports more practical forms of capacity building, including technical exchange, registry support, and mentorship linked to IARC tools and standards. These courses, delivered with the Graduate School of Cancer Science and Policy, have trained dozens of registry professionals using IARC tools and harmonised staging and coding standards, helping countries strengthen their population-based cancer registries and use data more effectively for planning and evaluation. NCC Korea's experience also feeds into wider initiatives such as the **Global Initiative for Cancer Registry Development (GICR)** and, more recently, training linked to **CanScreen5** on the collection and use of cancer screening data across the Asia–Pacific region.