IARC Impact in practice series
The Finland experience

***"IARC is innovative, highly appreciated, and essential to global cancer research: we need it to thrive."* Dr Sirpa Heinävaara, Finnish Cancer Registry**

Since becoming an IARC Participating State in **1986**, Finland has used IARC as a strategic bridge between its world-class national data systems and the international evidence and standards that shape modern cancer control. This partnership has strengthened prevention, screening, and risk assessment at home, while ensuring that Finnish registry expertise helps define how cancer burden, survival, and outcomes are measured globally.

Why IARC membership made the difference for Finland:

- **Scale with purpose:** Over the past decade, Finnish researchers produced 374 IARC co-authored publications, reflecting a level of collaboration that is exceptionally deep relative to population size. IARC-linked papers involve nearly eight times more institutions per study than Finnish oncology papers without IARC, showing Finland's integration in large, coordinated global research networks.
- **Evidence used across government:** IARC research is not confined to academia; it is routinely used in Finnish public-sector documents to inform cancer surveillance, screening organisation, vaccination strategies, and environmental and occupational risk assessment, demonstrating direct uptake into national policy and technical guidance.
- **Registry leadership that drives improvement:** Finland's population-based registries feed directly into Nordic and international benchmarking platforms, notably NORDCAN, enabling comparable long-term trend analysis, survival monitoring, and continuous performance improvement through harmonised indicators and methods.
- **Capability and standards that stay in Finland:** Finland has built a sustained capacity pipeline through 10 IARC fellowships since 1969 and strong participation in IARC's normative work, including the IARC Monographs, IARC Handbooks of Cancer Prevention, and the World Health Organization Classification of Tumours. This embeds international methods and standards in Finnish institutions while ensuring Finnish experience helps shape global guidance.

Part I. Scientific leadership through international collaboration

Exceptional collaboration intensity and depth

Finland's partnership with IARC reflects a highly integrated and globally connected research collaboration that consistently positions Finnish institutions within the core of large-scale international cancer epidemiology efforts

Over the past decade, Finnish researchers produced **3,149 oncology publications**, of which **374 were co-authored with IARC**[1], an average of **37 joint papers per year**, meaning roughly **one in eight Finnish oncology studies involves IARC collaboration**. This level of sustained output places Finland among the most active and scientifically engaged Participating States relative to population size.

Cancer in Finland: a high-income burden with opportunities for prevention

Based on recent GLOBOCAN estimates, cancer remains a significant public health challenge in Finland, with **around 37,700 new cases and 13,400 deaths each year**. Incidence rates are typical of high-income European countries, reflecting population ageing and continued exposure to modifiable risk factors. Although survival has improved through organised screening and strong health services, cancer remains a leading cause of premature mortality, highlighting continued opportunities for prevention and early detection.

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

The collaboration is distinguished not only by volume but by depth and international coordination. The scale of integration is particularly striking: **IARC-linked publications involve a median of 38 institutions per paper**, compared with **5 institutions** for Finnish oncology publications without IARC participation. Overall, collaborations span **2,181 institutions across 180 countries**, placing Finnish scientists at the centre of truly global research networks.

Micro-topic analysis shows that Finland–IARC outputs are strongly concentrated in **high-impact, data-intensive fields**, led by:

- **Genome-wide association studies (GWAS)**
- **Screening disparities and cancer prevention**
- **HPV and cervical cancer**
- **Nutrition, obesity, and metabolic risk**
- **Metabolomics and molecular epidemiology**
- **Genetic testing and biomarker discovery**

This pattern indicates a partnership focused on **large cohorts, biobanks, and pooled international datasets**, where multinational coordination is essential to achieve statistical power and policy-relevant evidence. Finland's strengths in population registries, long-term follow-up, and high-quality biospecimen infrastructures make it a natural and highly valued contributor to these platforms.

➔ **Leadership in European and global research infrastructure**

> ***"Working in collaboration with IARC can significantly strengthen the research. For Finnish researchers, those contacts bring clear scientific value."***
>
> **Dr Pekka Keski-Rahkonen**
> **IARC Liaison Officer**
> **For Finland**

Through IARC, Finnish institutions participate in and help shape major European and international research infrastructures that generate evidence directly informing prevention, screening, and risk assessment policies.

Examples from the past decade (2016-2026) include:

- **Biobanking and Biomolecular Resources Research Infrastructure (BBMRI):** linking Finnish biobanks to harmonised international platforms that support large-scale analyses of the genome, transcriptome, proteome, metabolome, and methylome, greatly expanding the scale and precision of cancer research;
- **Cohort Study of Mobile Phone Use and Health (COSMOS):** a multinational prospective study investigating mobile phone use and brain tumour risk, to which Finland contributes Nordic data and long-term follow-up that inform radiation protection assessments and public health guidance (see Part II);
- **European screening and prevention initiatives:** including IARC-supported work on the implementation and evaluation of cancer screening programmes across European Union Member States, helping define common standards for programme quality, coverage, and effectiveness (see Part II);
- **Nuclear emergency and radiation health surveillance research:** through projects such as **Nuclear Emergency Situations - Improvement of Medical and Health Surveillance (SHAMISEN)**, **Cooperation on Chernobyl Health Research (COCHER)**, and the **European Cancer and Environment Information System (ECNIS)**, drawing on Nordic expertise in long-term exposure assessment, surveillance, and population monitoring;

Box #2: Nordic registry leadership in global cancer evidence

A distinctive strength of the Finland–IARC partnership lies in Finland's **population-based cancer registry and long-term follow-up systems**, which provide decades of high-quality data on incidence, mortality, prevalence, and survival. The use of individual personal identifiers across nationwide registers enables near-complete case ascertainment and reliable linkage across health domains, making Finnish data among the most robust in international cancer surveillance.

Through IARC, these national assets feed directly into **NORDCAN**, the Nordic cancer statistics database and analytical platform developed jointly by IARC, the **Association of the Nordic Cancer Registries (ANCR)**, and the **Nordic Cancer Union**. NORDCAN 2.0 delivers harmonised and comparable statistics for Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, and Greenland, covering almost 60 cancer entities and more than 70 years of data.

This platform has become an international reference for comparing cancer outcomes across countries, tracking long-term trends, assessing inequalities, and evaluating the real-world impact of prevention and early detection strategies. By contributing its registry data to NORDCAN's harmonised architecture, Finland helps sustain one of the world's most complete and comparable population-level cancer data resources, supporting research, policy evaluation, and health system planning across the Nordic region and beyond.

Finnish expertise also strengthens IARC-led work on survival analysis, registry quality, and international benchmarking. In this way, Finland contributes not only data, but also the methodological foundations that ensure cancer burden is measured with rigour, consistency, and comparability across countries.

- **Large, pooled life-course studies:** including international consortia on childhood body mass index and later cancer risk, where Finnish cohorts contribute decades of follow-up and high-quality registry linkage that make long-term risk estimation possible.

➔ Shaping the global cancer research agenda and standards

Finnish 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), Finland 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, Finland 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.

Finland also play a central role in developing widely respected **international evidence frameworks and classification standards** that shape global cancer science, prevention, and regulation. During the 2020-2025 cycle, 7 Finnish experts have contributed to the IARC's flagship evaluations, including:

- **IARC Monographs Volume 129:** *Gentian violet, leucogentian violet, malachite green, leucomalachite green, and CI Direct Blue 218*
- **IARC Monographs Volume 131:** *Cobalt, antimony compounds, and weapons-grade tungsten alloy*
- **IARC Monographs Volume 133:** *Anthracene, 2-Bromopropane, Butyl Methacrylate, and Dimethyl Hydrogen Phosphite*
- **IARC Monographs Volume 139:** *Hepatitis D Virus, Human Cytomegalovirus, and Merkel Cell Polyomavirus*
- **IARC Handbooks of Cancer Prevention Volume 20A:** *Reduction or cessation of alcoholic beverage consumption and cancer risk*
- **World Health Organization Classification of Tumours (Blue Books)** 5th and 6th editions: Editorial board and expert contributions supporting international standards for tumour pathology classification and diagnosis across multiple organ systems

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

➔ Evidence that informs national regulation and prevention policy

In Finland, IARC assessments function as **operational inputs for government decision-making**, supporting routine evaluation of prevention policies, screening programmes, and risk management strategies. An **Overton analysis of Finnish public-sector documents** (2015-2026) identified **systematic citation of IARC research across national authorities and technical bodies**, demonstrating that IARC evaluations are embedded in day-to-day policy work.

> ***"Through IARC, Finnish experts could participate in a programme that connected them with colleagues working on cancer screening globally. That kind of link to an international community is a real added value."***
>
> **Dr Pekka Keski-Rahkonen**
> **IARC Liaison Officer**
> **For Finland**

The strongest uptake appears among organisations central to Finnish health policy and technical standard-setting, notably the **Finnish Institute for Health and Welfare (Terveyden ja hyvinvoinnin laitos, THL)**, **Current Care Guidelines (Käypä hoito)**, the **Finnish Institute of Occupational Health (Työterveyslaitos)**, and the **Finnish Medicines Agency (Fimea)**, alongside broader Government of Finland policy documents. This pattern shows that IARC evidence is being used where it matters most: in the institutions responsible for translating research into screening guidance, prevention recommendations, occupational standards, and evidence-based assessments of new interventions.

Across these documents, IARC evidence is used to underpin **concrete regulatory and preventive actions**, for example:

- **Registry benchmarking and surveillance:** use of harmonised international indicators and comparative analyses to monitor incidence, survival, and inequalities through Nordic and European platforms;
- **Screening policy and programme optimisation:** technical reports referencing IARC evaluations and implementation research to guide organisation, coverage targets, and performance assessment of population-based screening;
- **Vaccination and infection control strategies:** incorporation of multinational evidence on HPV prevention and long-term effectiveness to inform immunisation approaches (see Box #3);
- **Exposure and risk assessment:** application of IARC hazard classifications and epidemiological reviews in environmental and occupational health guidance.

Box #3: From evidence to prevention: HPV vaccination and infection-related cancer control

A clear example of IARC's public health impact in Finland is the translation of infection-related cancer research into **practical vaccination and prevention policy**.

Finnish researchers have contributed population data and epidemiological expertise to IARC-coordinated studies assessing the effectiveness of **human papillomavirus (HPV)** vaccination strategies. A large Nordic evaluation showed that **moderate vaccine coverage, when combined with a gender-neutral approach, can eliminate circulation of oncogenic HPV types**, providing strong real-world evidence that vaccination policy can substantially reduce future cervical and other HPV-related cancers.

These findings help inform how countries design vaccination strategies, set coverage targets, and plan implementation. By combining Finland's high-quality registry linkage and long-term follow-up with IARC's multinational analytical frameworks, this collaboration generates robust, policy-ready evidence on what works in practice.

A concrete illustration is Finland's participation in **COSMOS**, one of the world's largest prospective cohort studies investigating long-term mobile phone use and brain tumour risk. COSMOS follows **more than 250,000 participants across several European countries**, collecting detailed mobile phone usage histories and linking them to population-based cancer registry data over many years to assess potential health effects.

Recent analyses show that individuals with the highest cumulative mobile phone use do **not** experience a higher risk of developing brain tumours, including glioma, compared with lighter users, providing some of the most robust prospective evidence to date on this question. Finnish participation is strengthened by the country's high-quality registry linkage and long-term follow-up systems, which enable reliable outcome ascertainment and contribute substantially to the study's statistical power.

Evidence from COSMOS and related IARC evaluations supports **national and European radiation protection assessments and risk communication**, helping authorities base guidance on independent, long-term epidemiological data rather than precautionary assumptions alone.

➔ A European multiplier for evidence-based cancer policy

Across the European Union, IARC acts as a **multiplier of national efforts**, turning scientific evidence into coordinated, practical action at scale. An Overton analysis identified **over 500 EU policy and technical documents** (2005-2026) citing IARC research, demonstrating that IARC evaluations are routinely used by EU institutions and agencies to inform legislation, guidance, and public health strategies.

IARC both generates the evidence and translates it into action. Through large research infrastructures such as **EPIC (the European Prospective Investigation into Cancer and Nutrition)**, one of the world's largest cohort studies, following more than half a million Europeans, IARC provides the robust epidemiological evidence linking diet, obesity, alcohol, tobacco, and other exposures to cancer risk. This evidence is complemented by Europe-wide analyses that directly shape policy choices and guidance, for example, work showing that recent increases in prostate cancer incidence in Europe are likely driven by PSA testing patterns (with implications for screening approaches), comparative burden estimates for Europe (millions of new cancer cases and deaths annually), and major studies mapping socioeconomic inequalities in cancer mortality to inform targeted cancer control.

IARC also produces actionable modelling, showing that scaling up tobacco control could prevent one in four lung cancer cases in Europe (about **1.65 million fewer cases over 20 years**), and supports implementation through initiatives such as EU-funded implementation research such as **EU Joint Action on the implementation of cancer screening programmes (EUCanScreen)**, which sets common standards for screening delivery and quality assurance and **EUROHELICAN**, assessing the feasibility of population-based *H. pylori* test-and-treat strategies for gastric cancer prevention. In parallel, IARC remains a core technical partner in efforts to improve the quality, comparability and timeliness of cancer registry data and to refine indicators used in the **European Cancer Information System (ECIS)** and the **European Cancer Inequalities Registry (ECIR)**.

Together, this body of evidence feeds into one of IARC's flagship initiatives, the **European Code Against Cancer (ECAC)**, which converts evidence into clear, practical prevention recommendations for governments and citizens across Europe. IARC further supports implementation through coordinated European initiatives such as the **Innovative Partnership for Action Against Cancer (iPAAC)**, which brings Member States together to strengthen evidence-based cancer prevention policies and capacity building. Finnish partners, including

the **Finnish Institute for Health and Welfare** and the **Cancer Society of Finland**, contribute to this collaboration, helping translate IARC evidence into coordinated European and national prevention strategies.

IARC also strengthens Europe's prevention ecosystem by convening and supporting major collaborative platforms, such as **Cancer Mission Europe** and **Cancer Prevention Europe** (including its Learning Centre), that accelerate translation of evidence into capacity building and practice across Member States.

By combining independent evidence, harmonised methods, and implementation support, IARC enables Participating States to **benchmark performance, share best practices, and adopt proven prevention strategies faster and more efficiently** than acting alone. For Finland, this collaboration provides not only access to data and expertise, but a seat at the table where **European and global cancer control standards are defined**.

Part III. Building capacity for lasting impact

➔ Training as a gateway to international science

Training and knowledge exchange remain an important component of the Finland–IARC partnership, supporting the circulation of expertise between national institutions and international research networks. Historically, Finland has maintained a sustained presence in IARC's fellowship programmes. **Since 1969, ten Finnish scientists have benefited from IARC fellowships**, building long-term capacity in epidemiology, exposure science, and international multicountry research coordination.

> ***"I came to IARC from analytical chemistry, without that epidemiological background. Working at IARC gave me the chance to combine my own expertise with epidemiology and statistics in a way that was a real growth opportunity."***
>
> **Dr Pekka Keski-Rahkonen**
> **IARC Liaison Officer**
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Knowledge transfer is further reinforced through participation in IARC-coordinated networks and working groups. Finnish collaborators describe this engagement as a **gateway to global research communities**, particularly in areas such as cancer screening evaluation and registry-based studies, allowing Finnish scientists to connect with international peers and apply advanced epidemiological and statistical approaches that may not be available within a single national setting.

This engagement is part of IARC's wider capacity-building ecosystem, which includes the IARC Research Training and Fellowship Programme, the IARC Learning Programme (including the Summer School), 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.