

Gavi Alliance

Market Shaping Strategy 2021-2025

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Executive summary

Four strategic goals guide the mission of Gavi, the Vaccine Alliance. Its fourth strategic goal (SG4) is **to ensure sustainable, healthy market dynamics for vaccines and immunisation-related products; to incentivise innovation for the development of suitable vaccines; and to scale-up innovative immunisation-related products.** SG4's outcome may be considered as a tool supporting the achievement of the other three strategic goals and Gavi's mission to leave no-one behind with immunisation.

Since Gavi was founded in 2000, its market shaping work has expanded in scope, complexity, and ambition. The 2016-20 holistic *healthy markets* goal remains relevant in relation to the evolving environment. The market has evolved with a larger Gavi vaccine and product portfolio, greater activity on epidemic diseases, and increasing demand-related pressures on market dynamics. Country transitions began over the past 5 years (including India) and the next wave of large country transitions is expected from 2026. The supplier base has also expanded and diversified, improving product choice, supply security and competition, but in some cases has put pressure on business sustainability and market dynamics. COVID-19 may intensify supply and demand trends, including opportunities for new business models and technologies. While there has been wide uptake of new improved product presentations during 2016-20, advancement of development of certain innovations with transformative potential has been slow.

Gavi's Market Shaping Strategy for the period 2021-2025 (MSS 5.0) will evolve from a predominantly vertical market approach to an **integrated market approach**. The aim is to influence **cross-market** dynamics in more depth and breadth and over the **long-term**, to effectively manage the increased scope of Gavi's reach, and to help capture opportunities for favourable market evolutions during the critical 2021-2025 period that follows the distinct efforts and progress related to COVID-19. A **country/community-linked mindset** will integrate better the needs of countries into strategies to accelerate development and uptake of innovations that better serve marginalised communities.

The new market shaping model for 5.0 provides a strategic framework to deliver SG4 objectives, including three strategic priorities:

- **Foster a sustainably competitive future supplier base:** The MSS 5.0 approach will be comprehensive by associating the vertical vaccine markets view of Gavi 4.0 with a deeper understanding of suppliers' business and portfolio and a cross-cutting market portfolio view, and will stay flexible to manage rising challenges and seize opportunities driven by disruptive trends. The approach will be supplier-based, will seek to influence the environment, and will improve alignment between innovation priorities and market strategies.
- **Healthy demand is driven by a supportive environment:** The MSS 5.0 will support a more balanced view on markets, including demand health, and a more coordinated and intentional approach to influence demand-side issues. The approach is designed to be country-centric (strengthen country capacity for decision making, generate improved understanding of country needs and desires), to favourably shape the environment (market considerations are integrated in the development of guiding policies, enhance support for optimised regulatory processes), and will rely on new tools to guide demand health activities.
- **Establishing an enabling environment for transformational innovation:** The MSS 5.0 will drive vaccine product innovation with a more deliberate and country-

driven approach by creating an enabling environment that can deliver on a prioritised set of innovations that best meet country needs and have potential to directly contribute to 5.0 goals of increasing equitable vaccine coverage and reaching zero-dose children and missed communities. While the timeframe for MSS 5.0 aligns with the 2021-2025 period, product innovation cycles occur over a longer time horizon and the Alliance will undertake activities/interventions during the 5.0 period that are designed for impact beyond.

Three strategic enablers will help execute the strategy and deliver on the above aspirations. An **optimised market shaping partnership plan** will be implemented to improve the alignment, coordination, and efficiency of the extended Gavi partners engaged in market shaping. **Regulatory efficiencies** that contribute to enabling vaccine access will be supported through initiatives targeted to have the most direct impact on SG4 in the mid- to long-term, and that are complementary to Partner's activities. Finally, updated and new **strategic tools and processes** will developed/implemented to support operationalisation of strategic shifts and partnership optimisation.

This document also sets out the approach to monitoring and evaluation over 2021-25 and provides guidance on the next steps to operationalise the strategy.

1. Context influencing the Market Shaping Strategy 5.0

Gavi's model was initially built on the assumption that generating and organising demand from countries, providing funding, and using centralised procurement would lead to resolution of market failures for low-income countries, but this did not hold true in all circumstances¹. 2011 saw Gavi introduce a strategic goal to shape vaccine markets and shift to a more proactive and coordinated approach to market shaping, with a Supply and Procurement Strategy (SUPRS) focusing on supply security and price. Market interventions included supporting manufacturers investments in vaccine development and manufacturing and lowering prices (such as improving market information transparency, technical assistance to manufacturers and risk-sharing agreements), however risks of intended consequences were becoming increasingly apparent. The SUPRS 2016-20 (4.0) supplemented the initial priorities with a more holistic and ambitious goal to deliver results based on a transparent definition of a "healthy market", to take a long-term view of markets, and to improve support for innovative products that better suit country needs. More tailored market-specific approaches were implemented, including use of tools to support assessments of market health and evaluate trade-offs between competing market objectives, beyond exclusive focus on price (and the price lens shifting from affordability to sustainability² and total systems costs). Over the 2016-20 period, the number of markets with moderate/high healthy market dynamics increased from 1 in 2015 to 5 in 2020. This set the conditions for improved supply and pricing outcomes³, whilst 11 new innovative products were introduced in Gavi countries. Also during this period,

¹ J. Lob-Levyt; Contribution of the GAVI Alliance to improving health and reducing poverty; Philos Trans R Soc B Biol Sci, 366 (2011), pp. 2743-2747, 10.1098/rstb.2011.0040

² A sustainable price is defined as a price that is sufficiently low to be compatible with vaccines procured by Gavi on behalf of supported countries in a specific market, and that manufacturers can maintain for several years without leading to negative unintended consequences on financial viability and on the health of that vaccine market.

³ 10 of 11 markets had sufficient and uninterrupted supply in 2020, versus 7 of 11 in 2015. The weighted average price per child to fully vaccinate with pentavalent, rotavirus and pneumococcal vaccines fell by 24% from 2015 to 2020.

Alliance partners aligned around a common vaccine innovation prioritisation strategy and initiated a monitoring framework assessing unintended consequences of market shaping activities. A 2020 evaluation of the SUPRS 4.0 highlighted that the strategy had been *“relevant, appropriate and significant in the context of the evolving/ maturing market shaping role of Gavi and the supply context over the period.”* However, whilst Gavi has made progress in advancing ‘healthy markets’ across 2016-20, a more complex and interconnected environment and a more ambitious innovation (and equity) agenda, calls for an added layer of comprehensiveness to the market shaping approach to more deeply and deliberately understand and influence a broader set of issues.

	2015 (Gavi 3.0)	2019 (Gavi 4.0)	2025 est. (Gavi 5.0)
Supported vaccines	12	13	21
(n) suppliers	16	17	up to 24
(n) providing 2+ vaccines	6	8	up to 11
	IFPMA 4 DCVMN 2	IFPMA 4 DCVMN 4	IFPMA 4 DCVMN 7

The increased number of manufacturers based in developing countries supplying Gavi74⁴ and their portfolio diversification have improved product choice and supply security but have put pressure on business sustainability in markets where suppliers lose market share to other competitive suppliers whose profitability is, in turn, affected due to intense price competition. Some suppliers experience increasing price or supply pressures from local markets. These competitive dynamics could result in undesired market exits of some suppliers and financial instability for others, which could lead to less healthy markets.

There is a need to more deeply consider and monitor supplier health/sustainability, cross-cutting challenges, and opportunities across the current and future supplier base. This could lead to setting target outcomes for the overall supplier base and to tailored manufacturer strategies. It would also strengthen the specific vaccine market shaping strategies (Roadmaps) by ensuring that cross-market interdependencies are more comprehensively considered and addressed.

New innovative partnerships and business models between suppliers were established during the Gavi 4.0 period (contract manufacturing, regional distribution, technology sharing, etc), and these trends may intensify following COVID-19. This may lead to new market dynamics during the 2021-2025 period and have long-lasting effects on market structure. Gavi should understand these trends, identify the possible risks and opportunities for vaccine markets, and potentially shape these trends towards positive market health.

Demand-related challenges and risks are driven by two main factors and trends, some of which can negatively impact SG4 (cost, supply, sustainability) as well as SG1 (introductions): i) The increasing complexity of country decisions related to programme or product choice⁵ and impact that they have on market dynamics ii) Gavi’s increasing engagement in markets with unpredictable and/or volatile demand characterised by peaks and troughs linked to campaigns and reactive use, markets with uncertainties on vaccination strategies, schedules, or uptake.

Both IA2030 and Gavi 5.0 strategies put countries and communities at the centre and call for the need to support strengthening country capacity to prioritise

⁴ Gavi74 refers throughout this document to the 74 countries defined as Gavi-eligible in year 2000, less China, plus Syria that became eligible during 2016-20.

⁵ 23 product presentations on the Gavi menu in 2015, expected to increase almost threefold by 2025

support and identify vaccines and products most appropriate for their local context, with an emphasis on the need to scale-up innovative products that meet expressed country demand.

Over the last decade, advancement and/or uptake of **transformative innovations in low-and-middle income countries** (LMICs) have often been slow or disappointing. Alignment between Alliance partners on priority innovations achieved through the Vaccine Innovation Prioritisation Strategy (VIPS) provides a unique opportunity to define a more long-term, holistic, and integrated strategic approach to accelerate, and scale, these priority innovations.

Vaccine product innovations as prioritised by VIPS are critical to supporting Gavi 5.0's vision to "leave no-one behind with immunisation". They have the potential to be game changers by overcoming stubborn immunisation barriers. Product innovations identified in each vaccine Roadmap have the potential to significantly improve market offerings and are pursued within each vaccine strategy. However, these are not integrated into a global innovation agenda.

Both sets of prioritised innovations face significant barriers that may slow their development or compromise future scale-up. For countries, there is often a lack of data or processes to demonstrate incremental impact and to generate clear use cases, and costs may be a deterrent in the absence of incentives, making demand hard to predict. Product investments, in turn, are difficult to justify if the market or the development pathway are unclear.

During Gavi 5.0, **the proportion of demand that transfers** to non-Gavi supported markets will not grow significantly because India's transition is already integrated, and some volume may materialise from an expanded Gavi remit in Middle-Income Countries. However significant transitions are expected from 2026 so that during 2021-2026, countries will need support to prepare for the transition and there will be a need to mitigate potential impacts on markets.

The Gavi Partnership is engaged in shaping a growing number of markets, with more potential for overlap, more manufacturers to interface with, new initiatives driven by individual partners and an increased set of market information resources. Also, vaccine markets increasingly require cross-cutting and manufacturer-centric views in addition to the individual vaccine market views, around which Alliance partners have traditionally been organised. This points to the need to identify opportunities to better align with changing market shaping needs, improve the Partnership's efficiency and effectiveness, define updates to key strategic tools, and review additional needs.

The regulatory processes that manufacturers must navigate to license vaccines often differ in timelines and requirements across countries and regions, which ultimately translates into delayed access, has potential cost implications and is a cross-cutting issue that impacts supply, demand, and innovation.

Beyond these trends, opportunities and threats, the COVID-19 epidemic will have far-reaching and long-term disrupting effects on the vaccine market that need to be understood, monitored, and positively influenced. The impact may be favourable [e.g. the accelerated development of new business models between different types of industrial actors, the emergence of new actors (supply, research, development), the emergence of new technologies, accelerated innovations, more actors investing in global health with more resources, models to address regulatory challenges] and

may be unfavourable [e.g. disruption of supply, business threats to parts of the current supplier base, pandemic preparedness driving away resources from currently vaccine-preventable diseases, changing country priorities].

2. Market Shaping model for 5.0

Gavi's Market Shaping Strategy for the period 2021-2025 will evolve from a predominantly vertical market approach to an **integrated market approach**. The aim is to influence market dynamics in more depth and breadth and over the long-term, to effectively manage the increased scope of Gavi's reach, and to help capture opportunities for favourable market evolutions during the critical 2021-2025 period that follows the distinct efforts and progress related to COVID-19.

Gavi's market shaping mandate is focused on Gavi74, potentially extending to include a subgroup of never Gavi middle-income countries (MICs) with a GNI per capita lower than USD 4,000, depending on a future Board decision (June 2022).

The new approach builds on the foundations laid by the successful achievements of SUPRS 4.0: the holistic view of healthy markets will be expanded to include demand health and the innovation agenda will focus on creating an enabling environment to promote prioritised transformational innovations across immunisation-related products. These new focus areas are closely linked given that the uptake of innovative products is reliant on a supportive and healthy demand environment (e.g. country capacity to effectively assess the value of products and availability of evidence); whilst an understanding of future demand and country preferences is important to support appropriate and accelerated innovation, and uptake.

On these foundations, the MSS 5.0 adds four master principles for a higher degree of integration

Cross-market view: The Alliance will complement the in-depth vertical vaccine markets work of Gavi 4.0 with a cross-cutting market (geographic and vaccine market) and supplier portfolio view to have a more nuanced approach to the diversity of supplier profiles.

Country/community-linked mindset: The strategy will integrate better the needs and priorities of countries, consider the driving forces behind country decisions, support country capabilities and capacities, further integrate country perspectives in the demand-related and innovation-related workstreams.

Long-term view (10-year+ perspective): The MSS 5.0 will deliver healthy market dynamics that support a strong supplier base beyond the 5.0 period, will establish an innovation-enabling environment for the long-term, and an environment that supports long-term improvements in demand health, including preparation for the large country transitions that are expected during 2026-2030.

Learning-based approach: When implementing the strategy, market shaping partners will systematically adopt a learning attitude to new trends, new market shaping objectives, and new tools. This attitude will allow to learn from and capitalise on COVID-related evolutions, to flexibly adapt to the expected fast-changing environment during the 2021-2025 period, and to build solid foundations step-by-step: new approaches and tools will be designed and tested for one area, refined, and further deployed to other areas of market shaping (e.g. the learning based approach to prioritised innovations as described in section 3.3.).

Three focus areas for impact

1. Foster a sustainably competitive future supplier base

To ensure that Gavi's future supplier base supports Gavi's 5.0 healthy market goals, the Alliance's strategy will be **comprehensive** by associating the vertical vaccine markets view of Gavi 4.0 with a deeper understanding of suppliers' business and portfolio and a cross-cutting market portfolio view, and will stay **flexible** to manage rising challenges and seize opportunities driven by disruptive trends. The approach will be supplier-based (building a comprehensive view of profiles and portfolios, identifying risks to supply availability and affordability, interventions to support capabilities and sustainability), will seek to influence the environment (mitigate risks of overreliance on single NRAs, input to discussions on local/regional manufacturing hubs, alignment with other procurement entities on supply risks, manage impact of pandemics on market health), and will improve alignment between support for vaccine development and market strategies.

Target market outcomes:

- A sustainably competitive global supplier base covering the needs of Gavi74 and other countries for appropriate and affordable vaccines.
- Market evolution and dynamics strengthening supply security and ensuring uninterrupted supply of vaccines.
- Innovation driven by these suppliers lead to the development of suitable vaccines.

2. Healthy demand is driven by a supportive environment

The previously described demand-related challenges and opportunities call for a more **balanced view** on market health and a more **structured approach** to address demand issues. Gavi's market strategy (Roadmap) development process will define market-specific demand health outcomes; considering demand materialisation, demand predictability, the balance of demand of appropriate products, and timing of uptake of new innovative products. A portfolio view across market strategies will be taken to bring clarity on cross-cutting demand health issues. The MSS 5.0 strategy has identified cross-cutting market outcomes (summarised below) and an approach (including regulatory support, country evidence-based decision capacity strengthening, partner coordination, use of tools and platforms) that would create a supportive environment for healthy demand.

Target market outcomes:

- Global guidelines and policies are timely and consider market implications.
- The Alliance has a strengthened capacity to understand, influence and build demand health.
- The Alliance's demand health activities are harmonised and coordinated.

3. Establish an enabling environment for transformational innovation

During 2021-25, the MSS 5.0 will drive vaccine product innovation with a more deliberate and country-driven approach by creating an **enabling environment** that can deliver on a prioritised set of innovations that best meet country needs and have potential to directly contribute to 5.0 goals of increasing equitable vaccine coverage and reaching zero-dose children and missed communities.

While the timeframe for MSS 5.0 aligns with the 2021-2025 period, product innovation cycles occur over a longer time horizon and the Alliance will undertake activities/interventions during the 5.0 period that are designed for impact beyond.

Gavi has not traditionally engaged in vaccine market shaping activities beyond the strict remit of the Board-approved vaccine support objectives. However, some markets (e.g. HPV or IPV) required over 5 years of shaping before they could meet Gavi supply needs resulting in early market failures; such experience questions where, when and how Gavi Partners may usefully consider early interventions.

Target market outcomes:

- Clarity on country needs, preferences and priorities positions vaccine product innovations for uptake;
- An aligned partnership and sustained resources drives accelerated development, manufacture access, and uptake of prioritised vaccine product innovations;
- De-risked investments incentivise vaccine product innovations with clear public health impact.

Three strategic enablers to help execute the Strategy

Implement an optimised market shaping partnership plan designed to improve the alignment, coordination, and efficiency of the extended Gavi partners engaged in market shaping. *Please refer to Annex B.1. for details.*

- The MS partnership model 5.0 integrates the deliberate leveraging of partner organizations' comparative strengths and mandates in composing the market shaping collaboration, roles and responsibilities. It will intentionally integrate other actors to support market strategies and action plans where relationships with suppliers do not represent a conflict of interest. It will better coordinate the contribution and alignment of the diverse WHO functions that impact market.
- The MS engagement model 5.0: The 'square' market shaping leadership comprising of senior managers from Gavi-MS, BMGF-VDPC, UNICEF-SD, and WHO-IVB will be institutionalised through a terms of reference. Each square partner's capability-based leadership and support role will be formalised. This is complemented by a more intentional integration of other market shaping actors also based on complementary capabilities.
- Integrated processes and tools 5.0: Partners will better coordinate the manufacturer-facing process, develop a country-facing process, further engage WHO, and construct a harmonised information-sharing, market analysis & reporting framework.

Support regulatory efficiencies that contribute to enabling vaccine access through initiatives targeted to have the most direct impact on SG4 (supply, costs, and innovation) in the mid- to long-term, and that are complementary to Partner's activities. *Please refer to Annex B.2. for details.*

Gavi's regulatory support will contribute to three desired market outcomes:

- Increased supply and larger supplier base of new quality-assured vaccines and immunisation devices and equipment, monitored amongst other by the KPIs linked to the annual PQ list and time to prequalification
- Shorter timelines to in-country regulatory authorisation, with a target of 90 days after prequalification, which would enhance the aggregated demand health;

- More efficient vaccine lifecycle management, leading to a more flexible approach to post-approval variations, which would fluidify manufacturers' management of supply chain.

Note: The above market outcomes and KPIs are indicative: Gavi-MS, WHO and other Partners will build a plan to prioritise specific activities, the most appropriate KPIs, and the monitoring and reporting mechanisms for 5.0.

Implement updated strategic tools & processes

In considering the ways in which strategic tools can better fit for purpose during Gavi 5.0, tools have been updated with the aim of reflecting cross-market view, country mindset, and long-term view.

- **The Healthy Markets Framework** iteration for the 2021-2025 period can take demand health directly into account when assessing overall market health, and the way in which different categories of market health are conceptualised is better aligned with long-term market perspectives and the need for interventions.
- **Roadmaps** remain a critical tool for developing market strategies. Work is ongoing to improve process efficiencies and to lengthen strategy life cycle, allowing for clearer signalling of the Alliance's long-term visions for markets.
- **Financial tools** deployment by the Alliance will continue to evolve with the shifting market environment that creates new needs for manufacturers, countries, and partners.
- **New strategic tools and platforms** are being explored as described in Section 3 to help facilitate desired MSS 5.0 outcomes. Given the interplay between the three strategic priorities, there is potential for overlap and leveraging of efforts (e.g. tools and platforms to support integration of country perspectives into demand health and innovation workstreams).

Opportunities to influence Gavi 5.0 beyond SG4 and WHO's IA2030

The outcomes of Gavi's market shaping strategy will play a key role in achieving Gavi's Strategic Goals beyond SG4, as well as a number of the strategic priorities set out by the WHO Immunisation Agenda 2030 (IA2030).

Gavi's 'SG1' vaccine introduction and scale-up agenda and WHO's IA2030 agenda towards Universal Immunisation is supported by the broadened market strategy. In particular, it enhances country and regional capabilities to assess, prioritise, and implement decisions as a function of the local context, programmatic issues, long-term financial sustainability and global market considerations where relevant. And, while focusing on healthy markets for the Gavi74 countries, Gavi's MSS 5.0 will take into consideration global market dynamics with the intention of realising benefits for global markets and to ensure that it does not create unintended adverse externalities, thus supporting healthy markets for all countries.

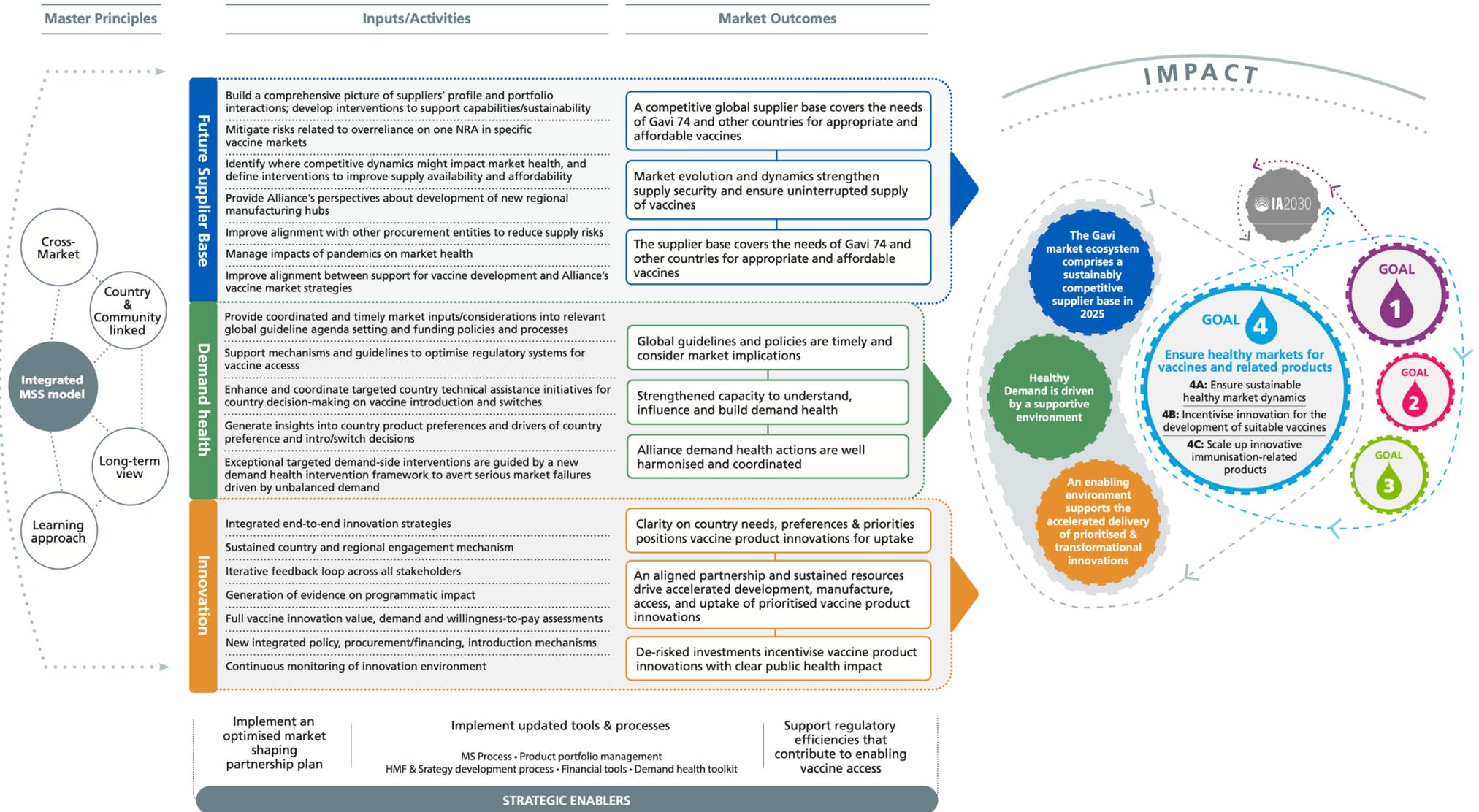
Gavi's market shaping approach to innovation will be a key driver to achieve Gavi's mission to leave no-one behind with immunisation, and to support equity as the key organising principle at the heart of the 5.0 Strategy. The country-focused approach will aim to identify and deliver innovations that improve programmatic sustainability to better serve marginalised and underserved communities. These will be supported by a 'data-driven' approach and the

strengthening of country capacity to prioritise Gavi support and identify vaccines that are most appropriate for the local context. The improved reach of marginalised communities will also be served by continuous efforts to strengthen delivery systems for immunisation, such as supply chains and data systems that extend the provision of immunisation services.

The MSS 5.0 will contribute to Gavi's objective to ensure successful transitions by ensuring a solid base of healthy market dynamics and by strengthening local capabilities to use market resources for self-sustainability, helping to support supply and procurement performance after transition.

The need for collaborative and enhanced partnerships emphasised by the Gavi's 5.0 strategy and by WHO's IA2030 is supported by the optimisation of the market shaping partnership as a critical enabler. This includes leveraging global health organisations beyond core partners, building on complementarity, increased process efficiency, and improved/shared strategic tools. Partners will also explore whether a more intentional and strategic expansion of market shaping partnerships may be relevant to unmet public health needs through 2030 such as AIDS, tuberculosis, malaria, epidemics, and neglected tropical diseases (such as CEPI priority vaccines) and other potential future priority vaccine candidates.

Theory of Change



3. Strategic priorities 2021-2025

3.1. Foster a sustainably competitive future supplier base

The Alliance will complement the vertical vaccine markets view of Gavi 4.0 with an approach that integrates more structured cross-cutting geographical market and supplier portfolio views. This comprehensive new strategy enhances Gavi's market shaping capabilities to support a more sophisticated engagement with the increasingly complex supplier base, and to develop the flexibility required to adapt to, and benefit from, potential post-COVID disruptive trends.

The Alliance will ensure that the future supplier base is sustainably competitive by achieving seven market outcomes

Market outcome 1: Suppliers have adequate capabilities and long-term sustainability to cover country needs. There is a high diversity of supplier characteristics in terms of technical capabilities, geographical markets, portfolio, general business model, financial health, and pipeline. By analysing these parameters, market shaping partners aim to go beyond the IFPMA/DCVM categorisation and develop a comprehensive view of a supplier's profile to better understand the challenges it faces. The Alliance will also combine the view of multiple suppliers to better understand the thematic challenges impacting the health of the supplier base (e.g. limited in-country marketing network, patent challenges, innovation funding). The supplier profile will also strengthen the vertical vaccine market assessments in roadmaps by improving the understanding of risk and by identifying interdependencies with other vaccine/geographical markets. This will allow MS partners to develop targeted interventions that support the improvement of suppliers' technical capabilities and long-term sustainability.

Market outcome 2: Over-reliance on suppliers operating under a single national regulatory agency (NRA) in a vaccine market should not lead to supply disruptions. In most of the vaccine markets supported by Gavi, most doses are provided by suppliers regulated by one NRA, which is considered as acceptable if the NRA is functional. The Alliance will continue to monitor the functionality of NRAs and, where appropriate, intervene to reduce related risks. This may be complemented by a proactive approach to strengthen the capacities of specific NRAs through additional support by the WHO which would require further resourcing.

Market outcome 3: Potential plans by other global health stakeholders to develop new regional/national manufacturing capabilities improve equitable access to vaccines while strengthening the health of vaccine markets. The Alliance will work with other global health stakeholders to support the development of viability studies and to share its perspective on i) the unmet needs that would be covered by new regional/national vaccine manufacturers, ii) the potential impacts of novel manufacturing and newly functional NRAs on international supply, and iii) their impact on Gavi's supplier base and potential changes in market dynamics.

Market outcome 4: Competitive dynamics in a vaccine market improve supply availability, suitability, and affordability without leading to unacceptable supply security risks. No market exit negatively impacts market health. While competition in the Gavi supplier base is a pillar of healthy market dynamics and

resulted in a sustained increase of supply availability, improved affordability of vaccines, and a rich pipeline, the intensity of competition in some markets have put pressure on business sustainability and occasionally led to market exits. Acknowledging this, market shaping partners will strengthen coordination aimed at detecting negative market dynamics affecting business sustainability and leading to risks on supply security, on investment in innovative products for Gavi countries, market health and, if necessary, will define interventions.

Market outcome 5: National prioritisation applied by a procurement entity does not lead to supply issues in Gavi74 and other countries. Price strategies applied by some procurement entities do not jeopardise the health of vaccine markets in other contexts. Where Gavi suppliers face pressure to prioritise supply to local markets and reduce prices to potentially unsustainable levels, there is a potential risk to supply availability in Gavi-supported countries, impacting overall market health by damaging the supplier ecosystem. To mitigate this risk, the Alliance will continue to promote equitable access to vaccines through advocacy, and through engaging with governments and other procurement entities, especially PAHO and the Government of India.

Market outcome 6: Challenges brought by new disease outbreaks and subsequent responses do not lead to supply interruption or adverse market exit. Difficulties related to the COVID pandemic do not further endanger the markets' health. COVID vaccine development and production do not negatively impact long-term supply security and innovation of other vaccines. The Alliance will actively monitor evolving externalities of the COVID-19 pandemic on the Gavi market and more globally on the value chain of immunisation, including on the availability of raw materials and other components for vaccine manufacturing, on the prioritisation of development programs (8 Gavi suppliers have, or are participating in, a COVID vaccine development programme), and on manufacturers' financial health. It will identify short-term (1-2 years), mid-term (2-4 years), and long-term (≥ 5 years) risks to market health, define and implement appropriate interventions. The tools and interventions used by the Alliance to manage the impacts of COVID-19 pandemics will be considered as a starting point to manage the impacts of future pandemics or major outbreaks on the health of vaccine markets.

Market outcome 7: The pipelines of suppliers includes the new vaccine candidates covering global unmet needs. Partnerships are built between manufacturers to develop new vaccines and/or increase their supply availability. Implementation of new technology platforms strengthens the health of Gavi-supported markets and beyond. The market shaping partners will seek to harness the potential impact of new technologies, new manufacturing platforms, and new business models in favour of global unmet needs by i) providing targeted support to development projects related to Gavi-supported vaccines based on the prioritisation defined by the Innovation workstream and by the supplier base assessment under this workstream, ii) by continued engagement with non-Gavi suppliers that have a pipeline covering Gavi-supported vaccines to share information that could support their business decisions, iii) by considering early integration of considerations on VIS and pre-VIS pipelines in supplier portfolio assessments.

The Alliance will rely on a new approach to achieve these market outcomes, using three distinct lenses when reviewing supplier characteristics



Macro lens that encompasses major trends and challenges seen in groups of suppliers and impacting the health of the overall supplier base.



Individual supplier lens that includes challenges impacting individual supplier's health and interdependencies in each supplier portfolio.



Vaccine market lens (i.e., supply and procurement roadmaps) that covers the supply-related risk exposure of markets and leads to defining supplier-specific market shaping priorities.

This approach translates into a set of new and current activities, reinforced by new strategic tools, that the Alliance will implement during Gavi 5.0 to ensure that the future supplier base is healthy. These activities focus on:

- Developing a more comprehensive picture of suppliers' profile and portfolio interactions, to complement the vertical vaccine markets view of Gavi 4.0
- Including this comprehensive picture when defining the vaccine market strategy (roadmap) which will translate into: i) market shaping interventions to improve market health and manage the impacts of market dynamics on suppliers' sustainability, ii) vaccine procurement strategy
- Working with partners and other global health stakeholders to mitigate risks and challenges facing multiple suppliers, and to ensure that new trends improve access to vaccines and strengthen the health of vaccine markets.

The three-lens approach will be operationalised with support from enhanced and new strategic tools, activities and workstreams

- **Supporting strategic tools and activities**

The vaccine(antigen)-specific roadmap process will integrate an updated healthy market framework (see Annex B3), and a more comprehensive view of supplier's profile and portfolio, integrating technical capabilities, sustainability, and the impact of COVID-19 using the three-lens approach.

Target innovations will be prioritised by the Innovation workstream and allow for consideration of role of (and support to) suppliers in future vaccine markets.

The methodical use of counterfactual analyses to compare potential impacts and costs of market shaping interventions versus the option of no intervention will help define the appropriate market shaping options and the choice of available risk-sharing and collaborative market shaping tools, as well as procurement planning and tactics.

- **Supporting regulatory efficiencies**

Gavi, as well as procurement agencies and governments, have come to rely on recommendations included in WHO Prequalification (PQ) Lists. It will therefore be critical for Gavi to continue its support to the Prequalification Team for vaccines and immunisation devices and help manufacturers

navigate the process. Country experts participating in PQ assessments and inspections could contribute to national institutional strengthening plans.

Gavi could also explore the possibility to support efforts to strengthen national regulatory systems, in particular if they focus on vaccine-producing countries accounting for an important part of the Gavi-supported vaccines supply with National Regulatory Authorities (NRAs) of Maturity Level 3 (ML3). This could help address the issue of overreliance on a single NRA such as capacity strengthening need for lot release testing. As a second priority, countries with NRAs close to ML3 could also be targeted, as more NRAs with ML3 could enable a widened use of reliance mechanisms.

- **Supporting partnership optimisation**

Gavi Secretariat, WHO, UNICEF and BMGF will use existing collaborative structures to manage the future supplier base strategy, weigh in on core topics impacting market health, decide on market shaping interventions and define the appropriate level of engagement with suppliers. The activities will be implemented by the relevant teams in each organisation, with the collaboration of extended partners (e.g. CHAI, PATH, Linksbridge) when analysing the market, supplier profiles, and portfolio analyses.

The Alliance will capitalise on agency-led activities such as WHO's workshop on the impacts of COVID-19 pandemic and development of non-COVID vaccines, and CEPI/BMGF's engagement on non-Gavi supported vaccines and new technology platforms.

The Alliance will maintain its engagement with other major procurement actors, including national procurement agencies, to encourage practices that strengthen supply security and affordability for all stakeholders.

The Alliance will continue to develop its relationships with suppliers, building on existing regular meetings (annual roadshow, vaccine manufacturing conferences) and complementing them with targeted engagement based on identified challenges and opportunities.

3.2. Healthy demand is driven by a supportive environment

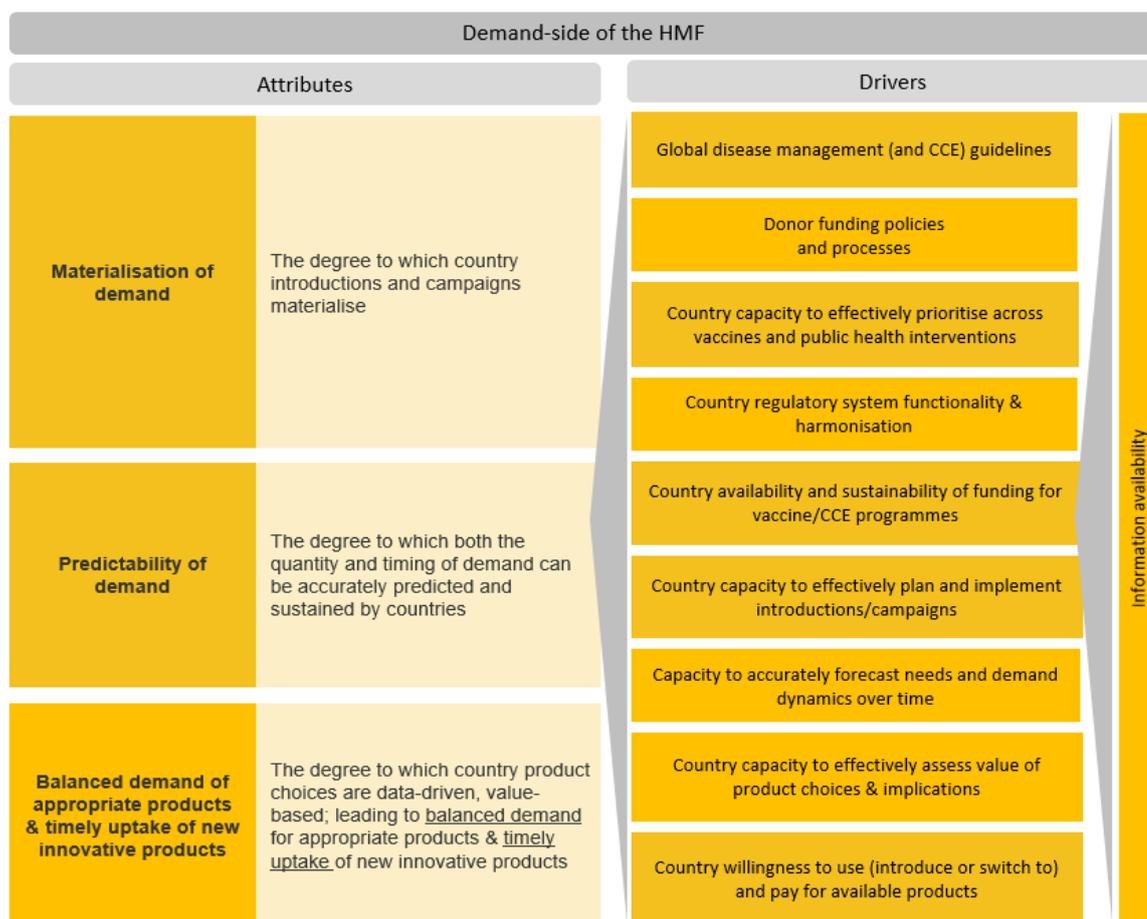
Definition: Healthy demand from a market perspective is defined as a state when programme **demand materialises** as expected, when the quantity and timing of demand can be **sufficiently predicted and sustained** over time, and when country product choices are evidenced-based and implemented with minimal delay, leading to the **balanced uptake of appropriate products** and the **timely uptake of new innovative products**. In short, demand should be timely, predictable, sustainable, balanced, and driven by evidence-based decisions and up-to-date policies.

Integrating a new demand health framework

A revised HMF has been developed by Alliance partners to represent a more holistic market view (see annex B.3 for details), which integrates three demand-specific attributes: **materialisation of demand**, **predictability of demand** and **balanced demand of appropriate products and timely uptake of new innovative products** (see Figure 1). Materialisation of demand captures the degree to which country programme demand (e.g. introductions/campaigns) materialises and the forecasted volumes convert into purchase orders and

shipments. The predictability of demand refers to the degree to which both the quantity and timing of demand can be accurately predicted and sustained by countries. The third attribute encapsulates the degree to which country product choices are data-driven, value-based, and swiftly implemented; leading to balanced demand of appropriate products and timely uptake of new innovative products.

Figure 1: Demand drivers



These three market attributes are influenced by 10 demand-side drivers, illustrated in Figure 1; some of which can be the root cause of more than one attribute. These drivers do not always give the full picture of market failures as these attributes can also be driven by the supply side (e.g. balanced demand may not be achievable if products are not comparable or necessary product data availability not equivalent). The revised HMF provides a comprehensive approach to assessing and communicating interactions and trade-offs between supply and demand attributes.

Partners have identified five market outcomes that would create a supportive environment for healthy demand to complement supply-side market shaping

To achieve Gavi 5.0 SG4 objectives, Alliance market shaping partners and expanded partners will complement supply-side market shaping with a more intentional approach to address demand health issues. Gavi’s market strategy (Roadmap) development processes will integrate the new HMF to support identification of market-specific demand side issues and activities. At a higher

level, Alliance partners have identified five market outcomes to be implemented across Gavi 5.0 that would create a supportive environment for healthy demand.

Whilst long-term accurate and transparent forecasting is a foundational market shaping tool (especially in the context of COVID-19, country transitions, and expanding product choices), dedicated forecasting accuracy work is outside the scope of this strategy. However, market outcomes 1-4 (below) will contribute to improve forecasting at the country and global level.

Market outcome 1: Global guidelines (e.g. disease management) and funding policies/processes are up-to-date and take into consideration important market implications, mitigating relevant demand health issues. Global guidelines (e.g. SAGE recommendations and WHO policy papers) and Gavi policies/processes have significant influence on country implementation (e.g. vaccine schedules, timing of campaigns, target populations, timing of new product launches etc), which can impact all three demand health attributes (materialisation, predictability and product uptake). Lessons learned from past and current market issues (see annex E for details), justify a need for enhanced, early, and well-planned integration of market considerations into development of global guidelines, policies, and processes. To **enhance timely and coordinated input of accurate market intelligence** into relevant process, and to ensure timely availability of relevant guidelines, Alliance partners will implement a new operating plan that defines roles and responsibilities ('Square' partners terms of reference).

Market outcome 2: Shorter timelines to in-country regulatory authorisation for vaccines. Timelines to NRAs issuing a national regulatory authorisation can be a contributing factor delaying vaccine access in Lower- and Lower-Middle Income Countries (LMICs). Less than 10 years ago, there was a 4 to 7 year lag between the first regulatory submission (usually in a high-income country) and the final approval in Sub-Saharan Africa for vaccines and drugs used to treat certain communicable diseases¹. With a long-term aim to accelerate this process and improve demand materialisation, **Gavi will support: i) efforts to raise awareness of existing and future mechanisms and guidelines aimed at optimising regulatory systems** and their relevance for vaccine access and **ii) support their implementation.** Examples of such mechanisms include collaborative registration procedures (with a focus to ensure they are as rigorous and widely used for vaccines as they are for medicines), guidelines on good reliance practices in regulatory decision-making (e.g. for lot release testing), guidelines on procedures and data requirements for changes to approved vaccines, etc. Implementation support could entail regional workshops on the implementation of guidelines.

Market outcome 3: Strengthen the Alliance and country approaches to evidence-based decision making and implementation, including vaccine programme prioritisation and product choice assessments for introduction and switch (including assessments of product innovations). In the context of COVID-19, the expansion of Gavi's vaccine portfolio and the number of product choices it becomes increasingly complex to prioritise and compare the public health value of different options, across programmes and products. The enhanced country capacity (to prioritise programmes, assess product characteristics, total systems costs and the full value of innovations) should result in enhanced

¹ <https://doi.org/10.1371/journal.pone.0166515>

outcomes (earlier/better implementation of normative guidance, reduced reliance on manufacturer in-country marketing efforts, less inertia to remain with incumbent products, accelerated uptake of innovative/competitive product offerings, support of wastage-limiting solutions). This would support the environment for both healthy demand and transformational innovation (Strategic Priority 3).

The SDG3 Global Action Plan calls for improved data-driven, evidence-based, transparent decision-making processes, and recognises that “responsive, inclusive, participatory and representative decision-making at all levels” is critical to the attainment of the SDGs. IA2030 calls for stronger national decision-making capacity and the ability to set evidence-based policies and priorities for immunisation through NITAGs (national immunisation technical advisory groups), supported by regional and global policymaking mechanisms.

Market shaping partners are supportive and identify the need to **enhance coordination and further development of targeted country decision-making capacity strengthening initiatives**, to ensure resources are directed to meet the needs of the most important demand health challenges potentially impacting SG4 and other SG outcomes over the long-term. Gavi’s Roadmaps should provide inputs to support planning, and information on drivers of country preferences as described under market outcome 4 will be an important input. **Alliance efforts to generate a repository of decision-making tools for countries should be supported** (see annex B.3 for a preliminary list), including integration of new tools developed with the work on product innovation (as described in 3.3, such as Full Vaccine Value Assessment tools). In addition to the above interventions, ensuring product data is availability to Gavi countries in a timely, comprehensive, and digestible manner will remain important (led by Gavi market shaping).

Market outcome 4: Country product preferences and drivers of country preferences and intro/switch decisions are well understood, enabling potential demand and supply-side issues to be anticipated. Increased efforts are needed in the collection of intelligence on country preferences for current and future product alternatives, and drivers of country preferences and intro/switch decisions (such as willingness to pay for innovations). This insight will enable future market dynamics to be more accurately anticipated and earlier, evidence-based intervention (important in the context of market outcome 5). Insights will also support direction of country capacity building efforts (market outcome 3).

Gavi’s Roadmap processes should be used as the key coordinating tool for identifying country preference intelligence needs and interpreting, acting, and communicating on these insights. Platforms to better understand country preferences should be explored, potentially leveraging existing platforms and in coordination with ‘product innovation’ activities (described in 3.3).

Market outcome 5: Alliance agrees and pursues an appropriate course of action to avert serious market failures driven by unbalanced demand. Healthy markets should exhibit balanced demand across product offerings, where product preferences are well understood and choices are evidence-based (as per market outcomes 3 and 4), and met by supply of appropriate products from a sustainably competitive supply base. However, when demand is not balanced across product offerings, this has the potential to negatively impact healthy market outcomes, which can also put other Gavi strategic goals at risk. These dynamics have been observed in a number of markets, notably CCE and HPV (annex E).

Thus, where there is this tension between country preferences and Gavi's strategic goal outcomes (SG4 and others), that cannot feasibly be addressed by supply-side interventions, exceptional targeted demand-side interventions are considered. To guide an appropriate course of action **a new demand health intervention framework is introduced**. The aim is to ensure a systematic approach and decision pathway based on market health impact, ensuring the appropriate partners are engaged to evaluate any health impact and programmatic considerations or other risks (such as reputational risk); bringing coordination and accountability across Alliance partners (see annex B.3 for details).

To operationalise the strategy, Alliance MS Partners will establish, optimise, or amplify use of strategic tools, platforms, and processes

- Partners will use Gavi's market strategy (Roadmap) development processes as the primary platform and tool to ensure demand health activities across Alliance partners are identified and well-coordinated. The new HMF that integrates demand health attributes will be applied as a common framework for assessing issues and tracking progress against activities.
- Partners will establish a process to ensure Gavi's Roadmaps are linked to and aligned with the coordinating bodies of targeted country technical support initiatives to ensure needs are well understood and prioritised. Roadmaps should consider how these initiative and resources can be better leveraged or strengthened to address market specific issues.
- Partners will generate a repository of decision-making tools for countries, including the eventual integration of new tools developed with the work on product innovation (as described in 3.3, such as Full Vaccine Value Assessment tools). Partners will continue to ensure product and market related information is available to countries in a timely manner to inform decisions and support programme implementation.
- Partners will map future needs and priorities for deeper insights into country product preferences and drivers of decisions, and will create or leverage country engagement platforms. This will be explored in coordination with the work on product innovation (as described in 3.3) where mechanisms for sustained and prioritised country and regional partnership will be developed.

Partnership optimisation will be important in the context of an expanded demand health scope and ambition

Moving from a largely one-sided approach to cover both demand and supply sides, will warrant greater engagement with extended Partners and coordination across Gavi Secretariat team and Alliance partners will be important. Operationalising demand health related activities will leverage existing market shaping platforms (Roadmaps and the MS 'Square group') for strategy development and decision making. A new terms of reference for the 'Square group' will be developed to improve coordination (see annex 1). Where demand side interventions have programmatic implications (as described under market outcome 5) a new demand health intervention framework is introduced to guide decisions and engagement across extended Partners.

3.3. Establish an enabling environment for transformational innovation

Definitions: Innovations discussed in this strategy include three broad categories

i) *Vaccine product innovation* refers to new improved products or to adaptations of existing products for Gavi-supported antigens that provide measurable programmatic or financial benefits to lower- and middle-income countries (e.g. vaccine effectiveness, coverage and equity, total system savings).

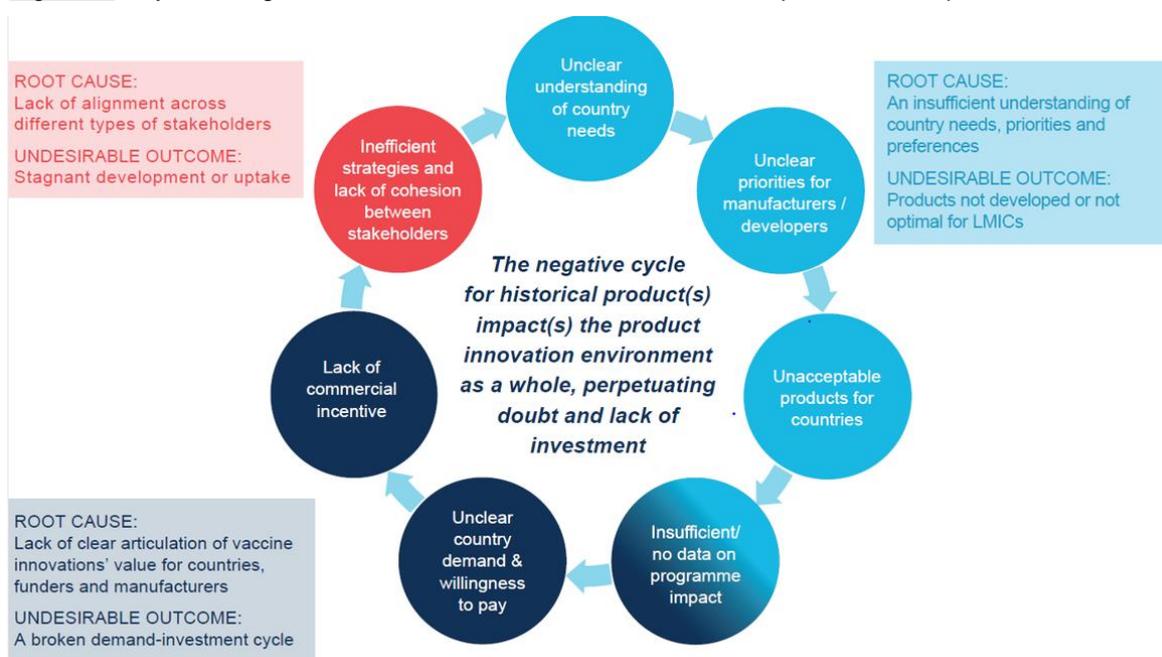
ii) *Antigen innovation* refers to novel vaccines that address diseases for which there is no vaccine solution as yet. It is considered separately from product innovations.

iii) *Other immunisation-product innovation* refers to non-antigen related products such as CCE or diagnostics.

Partners identified three root causes to the bottlenecks and challenges that hinder vaccine product innovation for LMICs based on a strategic assessment involving case study analysis and significant stakeholder consultations:

- (i) Insufficient country engagement risks leading to innovations that may not address country needs, preferences or priorities, or that may not be accepted.
- (ii) Lack of alignment between stakeholders risks leading to a lack of coherence between investment in innovations and country demand, and/or to protracted timelines.
- (iii) The lack of a clear pathway to return on investments from innovations or historical failures risks leading to limited investment by product developers, vaccine manufacturers, and funders.

Figure 2: Key challenges, their root causes and outcomes that impede vaccine product innovation



To address these root causes, Gavi Partners will create an enabling environment by achieving three market outcomes, with a focus on one innovation category, using a learning approach.

Focus in 5.0 will be on product innovations, acknowledging that most of the activities are also relevant for antigen innovation. Such focus will be a foundation

on which to change traditional ways of working and approaches step by step in a long-term effort.

A learning-based approach will address a prioritised list of innovations. New approaches, tools and mechanisms will be designed and tested for one innovation, refined, and then deployed to other innovations. The innovations identified in the Market Shaping Roadmaps will be prioritised based on country needs and contribution to Gavi’s goals on coverage and equity and added to VIPS priorities.

Market outcome 1: Clarity on country-needs, preferences and priorities positions vaccine product innovations for uptake. Product innovations must be driven by a clear public health (country) need and use case, and product characteristics must be aligned with country context/intended use case.

Market outcome 2: An aligned Alliance partnership and sustained resources drive accelerated development, manufacture, access and uptake of prioritised vaccine product innovations. Stakeholders’ alignment from early product development to country uptake must be established from the outset to ensure engagement and coordination throughout the product lifecycle.

Market outcome 3: De-risked investments incentivise development, manufacture, access and uptake of vaccine product innovations with clear public health impact. Incentivising development and uptake of prioritised innovations will require to create demand and bridge the gap between public health value and potential higher price, between cheaper options and willingness-to-pay, and create a ‘pull’ for innovations with clear public health impact.

To operationalise the strategy, Gavi Partners will establish, optimise, or amplify two strategic platforms, and 10 strategic tools and activities

Figure 3: Strategic platforms, tools, and activities in support of an enabling environment for innovation

Market outcomes	Clarity on country-needs, preferences and priorities	Aligned Alliance partnership and sustained resources	De-risked investments
Strategic platforms	Country engagement mechanism for sustained and prioritised country and regional partnership *		
	Iterative feedback loop across all stakeholders		
Strategic tools and activities	Monitoring of in-country programmes and barriers to immunisation *	Monitoring of the vaccine innovation environment	In-country implementation research, modelling, pilots *
	WHO preferred product attributes and target product profiles	Integrated, end-to-end strategies *	FVVAs (Full Vaccine Value Assessments) *
			Potential use cases and demand sizing *
			Willingness-to-pay analyses *
			PPoPs (Preferred Policy Profiles) *
		New and integrated policy, procurement/ financing / introduction mechanisms *	

* Indicates a new platform, tool or activity as opposed to existing ones which would be amplified/tailored. Most tools and activities will inform other tools or activities.

Strategic platforms needed across the three market outcomes:

- Alliance partners will **create a country engagement mechanism for sustained and prioritised country and regional partnership**, building on IA 2030 and SP7 priorities on research and innovation and leveraging other existing Alliance platforms. This will inform the prioritisation of product

innovations, their development, the assessment of demand and of willingness-to-pay. This mechanism could also be used to assess country preferences on existing or newly available products and coordination with the work on demand health will be ensured.

- The VIPS Alliance will seek early on to **establish an iterative feedback loop across all stakeholders** (vaccine manufacturers, innovation developers, regulators, policy makers, funders, procurers, and implementation partners) to ensure alignment and buy-in from the outset. It will leverage existing platforms and consider strengthening/formalising the role of existing working groups, (e.g. the WHO/PATH-led Delivery Technologies Working Group).

Strategic tools and activities supporting market outcome 1 (Clarity on country-needs, preferences and priorities positions vaccine product innovations for uptake)

- **Monitoring of in-country programmes and barriers to immunisation:** WHO has developed and is implementing a tool to enable national immunization programmes to assess their immunization programme performance, using existing evidence to characterise critical programme barriers. The information obtained could identify barriers that might be overcome by vaccine product innovations and help inform future vaccine product innovation prioritisation.
- **WHO guidance on preferred product attributes and target product profiles** provides necessary guidance to manufacturers and developers on desired improved characteristics for products to be used in LMICs. These will be developed for VIPS priority innovations, in the context of specific vaccines and based on country needs and preferences, and explored for specific vaccines where it could be beneficial, e.g. rotavirus.

Strategic tools and activities supporting market outcome 2 (An aligned Alliance partnership and sustained resources drive accelerated development, manufacture, access and uptake of prioritised vaccine product innovations)

- The Alliance will continue to **monitor the vaccine innovation environment**, focusing on COVID-19 innovation developments, new stakeholders, developments related to VIPS priorities or new breakthrough data for innovations not prioritised through VIPS. This will help revise and adapt prioritisation and strategies as needed.
- The VIPS Alliance will develop **integrated, end-to-end strategies for the VIPS priorities across immunisation partners**, from product development up to country uptake. 5-year action plans will facilitate stakeholder alignment and coordination on a common goal and a holistic approach that informs and de-risks investments and prepares early for uptake², and will be leveraged to ensure focused and sustained resources. For product innovations identified through the Market Shaping roadmaps, the **end-to-end view** will be taken through the **development/update of the roadmaps**.

Strategic tools and activities to support market outcome 3 (De-risked investments incentivise development, manufacture, access and uptake of products with clear public health impact)

² For barcodes on primary packaging, the advancement of this innovation will begin with successful placement of GS1 compliant barcodes on secondary packaging.

- The Alliance will generate evidence to assess the programmatic and public health impacts of priority innovations across potential use cases through **in-country implementation research, modelling studies and/or demonstration pilots**. These data will help provide the rationale for broad procurement and policy recommendations, support country decision-making and inform introduction. There is a growing interest for differentiated products with innovative attributes that could address context-specific barriers to immunisation through sub-national vaccine delivery strategies, but country feasibility is not well understood and implementation research could help assess both feasibility and challenges and inform strategies. Given multiple country priorities and funding required to conduct these studies, the Alliance will develop an approach to prioritise, plan and coordinate these studies and/or pilot introductions, and clarify a funding mechanism.
- **Full Vaccine Value Assessments (FVVs)** assess the full value that a vaccine-product innovation offers in terms of broader public-health and socio-economic gains (individual and population-based benefits). FVVs will be developed in addition to evidence on programmatic impact to demonstrate value (vs price) from the perspectives of countries and funders, to help determine willingness-to-adopt and willingness-to-pay, and to inform demand and decision making.
- A new concept, **Preferred Policy Profiles (PPoPs)**, will be tested by the WHO. Envisaged as non-binding guidance, these documents will aim to specify the anticipated recommendation for use to inform late-stage product development programmes regarding expected evidence. This may prove particularly useful for vaccines where there are innovative routes to licensure, (e.g. controlled human infection model, correlates of protection, and/or delivery by novel devices). Guidance will be aspirational and will not preclude the comprehensive SAGE Evidence to Recommendation process.
- **New and integrated policy, procurement/financing and introduction mechanisms** may be considered to de-risk investment and bridge between the value of an innovation and willingness to pay, and may be required in parallel to product development to provide greater clarity and certainty to manufacturers on the pathway to country uptake. A pathway for differentiated product policy, financing, procurement and introduction will also be assessed and designed to facilitate in-country use of differentiated presentations.

Supporting regulatory efficiencies: The strategy on new delivery technologies such as those prioritised by VIPS will **engage global regulators, WHO PQ, regional and local regulators early, to ensure alignment on regulatory pathways and data requirements** and avoid unnecessary delays. For other innovative products that are closer to our “traditional” vaccine portfolio, regulatory priorities are those highlighted for the future supplier base and for demand health.

Strategic partnerships: The Gavi Secretariat, WHO and UNICEF will co-lead the **VIPS Alliance** and collaborate with the BMGF and PATH to co-define the required approaches, mechanisms and tools and to develop a fully integrated approach to transform the environment for vaccine product innovation, with the Secretariat playing a catalytic role in convening the VIPS Alliance. **New partnerships** will also be developed, including with new groups within the VIPS organisations (e.g.

broader engagement with UNICEF for strong programmatic inputs), with other implementation partners (e.g. CHAI to support on country engagement), and with new potential funders to access the needed resources for prioritised innovations.

Innovations with a longer-term horizon: Significant pre-VIS market shaping activities are out of scope and long-term horizon innovation themes will be considered as and if they fit into the broader MSS approach. Three types of activities may contribute to addressing select challenges while leveraging MS capabilities and fit with activities envisaged in other workstreams:

i/ Facilitate light-touch prioritization of non-Gavi supported antigens and support a longer-term view across Gavi market shaping efforts by enabling supplier discussions, feeding into the Alliance's Future Supplier Base strategy, supporting the efficiency of the VIS process, and identifying potential cross-cutting issues.

ii/ Use relevant FVVA methodologies in support of the VIS process to ensure that the required evidence is generated during development and is available when VIS assesses the vaccine, clearly articulate the VIS assessment criteria externally on an antigen-agnostic basis.

iii/ Consider targeted Gavi support case by case ensuring that market shaping partners voice clear, justified needs in a timely fashion.

Other immunisation-product innovation: While the focus will be on creating the foundation of the enabling environment for product innovation in 5.0, specific activities will be implemented for Cold chain equipment (CCE) and diagnostics that will benefit from the global enabling environment.

CCE market shaping efforts have focused on fridges and freezers (ice-lined refrigerator (ILR) and solar direct drive (SDD) equipment) and have successfully catalysed the widespread country deployment of innovative and higher-performing products. Further innovation of ILRs / SDDs is still needed during Gavi 5.0 to achieve greater standardisation, and to introduce other product categories that improve last-mile outreach and access to field performance data. New market shaping strategies will be needed to better understand country needs, mobilise country demand, incentivise continued CCE product development and scale-up, better understand and respond to key market issues (volatility and visibility of demand), and to guarantee efficient and appropriate supply of the full range of CCE products needed for storage and delivery of COVID-19 vaccines.

During 4.0, Gavi catalysed the development of several types of yellow fever (YF) diagnostic tests, including a new class of YF antigen test to detect acute YF cases that promises to be less expensive and less complicated than previously available technology. Building on this progress, a disease surveillance strategy including further diagnostic test market shaping for other antigens such as TCV (typhoid conjugated vaccine) will be part of the 5.0 scope. Gavi's market shaping function will be involved in supporting diagnostic test supply roadmaps and in providing ad-hoc market shaping expertise as needed but is unlikely to be involved in the specific implementation of the disease surveillance strategy, which is expected to draw on the expertise of the diagnostic branch of UNICEF-SD.

4. Monitoring and evaluation framework and next strategic steps

Monitoring and evaluation framework

The Alliance will monitor key indicators to track progress in implementing the MSS 5.0 and will report on these indicators on an annual basis (see Annex D). SG4 objective-level indicators will track progress towards achieving sustainable healthy markets, incentivizing and scaling-up innovations. To provide a more comprehensive picture of incremental progress or challenges in achieving SG4 objectives, the Alliance will also monitor driver-level indicators. These will monitor operational performance and certain intermediate market outcomes associated with the MSS 5.0 strategic priorities that contribute to SG4 objectives.

Figure 4: Gavi 5.0 SG4 objective- and drive-level indicators

SG4 Objective		Objective-level indicators	Driver-level indicators
4.1	Ensure sustainable, healthy market dynamics for vaccines and immunisation-related products at affordable prices	Number of markets exhibiting acceptable market dynamics	<u>Sustainably competitive future supplier base:</u> Number of markets with supply interruptions and insufficient supply that cannot meet demand
			<u>Sustainably competitive future supplier base:</u> % of planned Alliance activities on track to ensure business sustainability of suppliers / competitive market dynamics
			<u>Healthy demand:</u> % of planned Alliance activities on track to address unbalanced demand for appropriate products
4.2	Incentivise innovation for the development of suitable vaccines	Number of innovative products within the pipeline of commercial-scale manufacturers	<u>Enabling environment for transformational innovations:</u> % of Alliance activities on track to support innovations
			<u>Enabling environment for transformational innovations:</u> % of Alliance activities on track to develop new approaches and tools to demonstrate the full value of an innovation from the perspectives of countries and funders
4.3	Scale up innovative immunisation-related products	Number of vaccine and immunisation-related products with improved characteristics procured	<u>Enabling environment for transformational innovations:</u> Number of products with improved characteristics added to the Gavi-menu
			<u>Healthy demand:</u> Time from prequalification to first country adoption

Next steps to operationalise the MSS 5.0

Figure 5: Next step activities to operationalise the MSS 5.0, including timelines and stakeholders

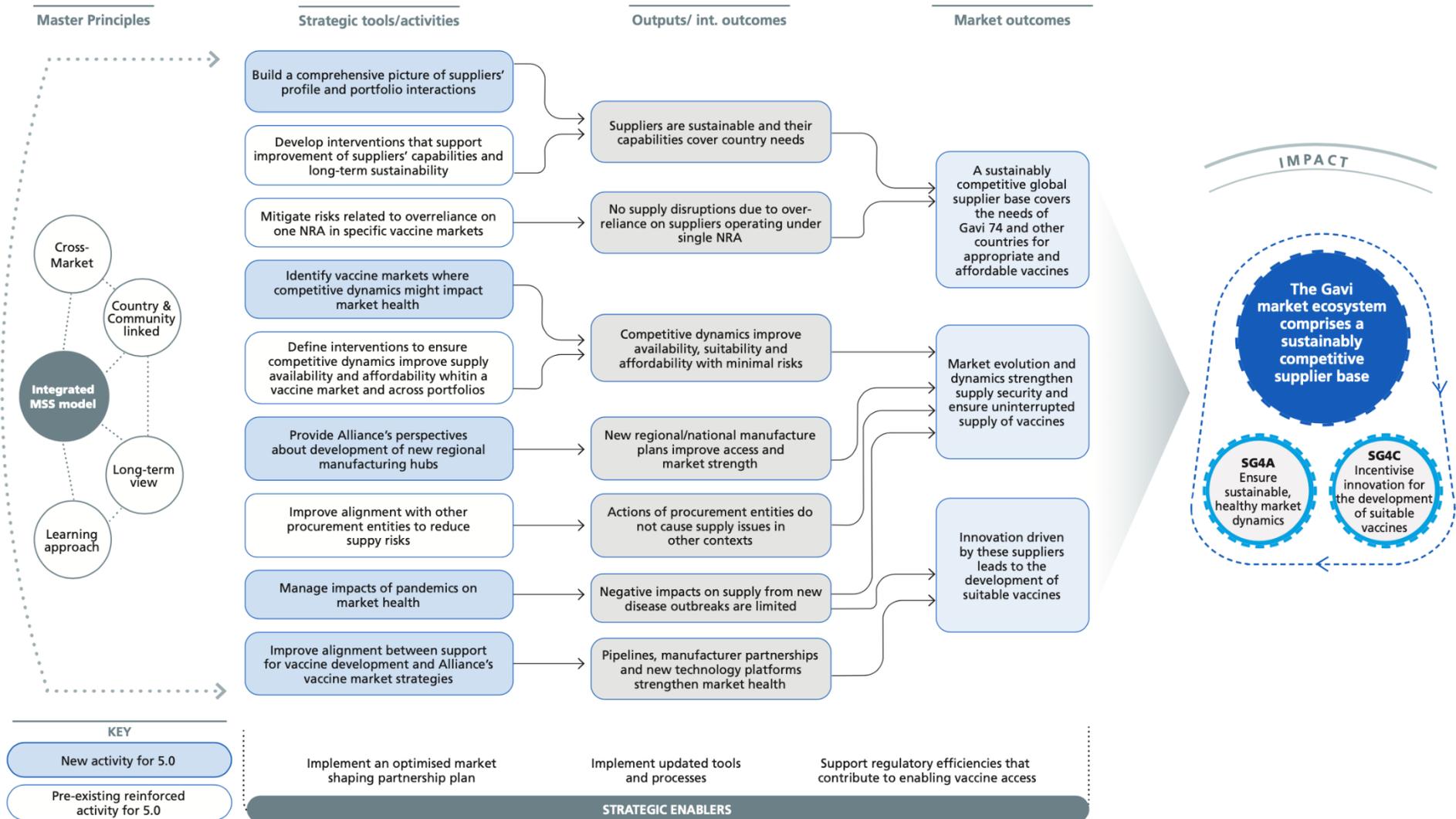
	Activities	Start	End	Gavi Effort			UNICEF Effort	BMGF Effort		WHO Effort	
				MS	Strategy	VP	SD	VDCP	Reg.	IVB	Reg.
Partnership Optimisation	Draft the terms of reference of the Square Group, including roles and responsibilities, extended market-shaping partners landscape, and frameworks under which to engage: <ul style="list-style-type: none"> a harmonised market reporting framework a manufacturer-facing framework a country-facing framework a global guidelines & funding policies/processes engagement framework 	2021 Q3	2021 Q4	●			●	●		●	
	Define and agree next steps for further WHO engagement	2021 Q3	2021 Q4	●			●	●		●	
Future Supplier Base	Align on and identify the broader/extended partner landscape	2021 Q3	2021 Q3	●			●	●		●	
	Outline a detailed operational plan to implement the activities of FSB workstream	2021 Q3	2021 Q4	●			●	●		●	
	Define partners' roles and responsibilities, and frameworks under which to engage	2021 Q3	2021 Q4	●			●	●		●	
	Establish Project Management Office (PMO) structure	2021 Q3	2021 Q4	●			●	●		●	
Healthy Demand	Map Secretariat roles & responsibilities (R&R) to enhance operationalization of new product uptake	2021 Q3	2021 Q3	●		●					
	Map future needs and R&R regarding country decision-making capacity building initiatives planning (TA and WHO tools repository)	2021 Q3	2021 Q4	●		●		●		●	
	Establish plan (including platforms) to gain insights into country product preferences and drivers of intro/switch decisions	2021 Q3	2022 Q1	●				●			
Transformational Innovation	Agree the non-VIPS priority innovations for 5.0	2021 Q3	2021 Q3	●			●	●		●	
	Agree on activities needed for the non-VIPS priority innovations	2021 Q3	2021 Q3	●			●	●		●	
	Assess funding / resource needs and define funding strategy	2021 Q3	2021 Q4	●			●	●		●	
	Develop an implementation plan for 5.0	2021 Q3	2021 Q4	●			●	●		●	
Support regulatory efficiencies	Define prioritised activities in line with existing operational plan	2021 Q3	2021 Q4	●			●		●	●	
	Align prioritised activities with other RPQ donors	2021 Q3	2021 Q4	●			●	●		●	
Support regulatory efficiencies	Refine budget estimates to inform WHO and Gavi next strategic cycle	2021 Q3	2021 Q4	●			●	●		●	
	Advocate for regulatory funding within PEF structure	2021 Q3	2021 Q4		●						
	Investigate opportunity to work with other partners on regulatory efficiencies	2021 Q3	2021 Q4	●			●	●		●	

Strategy workstream leaders conducted a **preliminary estimation of the resources needed** to achieve MSS 5.0. These estimates indicate:

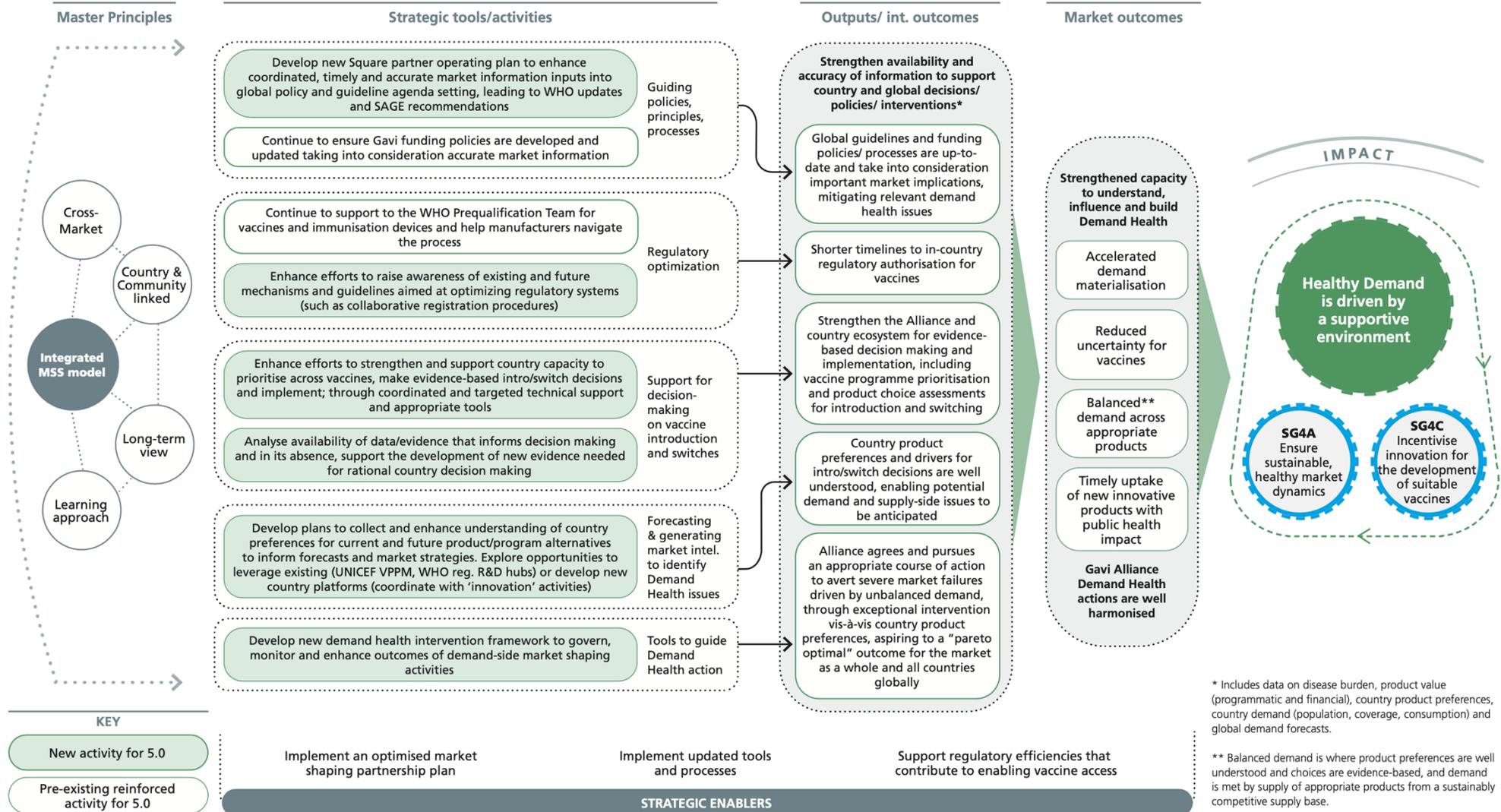
- Managing with existing headcounts the Secretariat MS team and Square group will use the 3Q-4Q 2021 period to make progress on the 'next step activities', to confirm resource needs across partners in 2021-25, and to finalise SG4 indicator targets.
- Preliminary estimations suggest material resource gaps (approx. 1-2 additional FTE equivalents at the Secretariat MS level, as well as incremental budget for certain activities), but operational plans are needed including allocation of work across Partners before this can be confirmed. In case of inability to meet additional resourcing needs across the Secretariat and Partners within available budgets, needs would be brought back for approval, or activities and SG4 indicator targets will be recalibrated.

Annex A: detailed Theory of Change by strategic priority

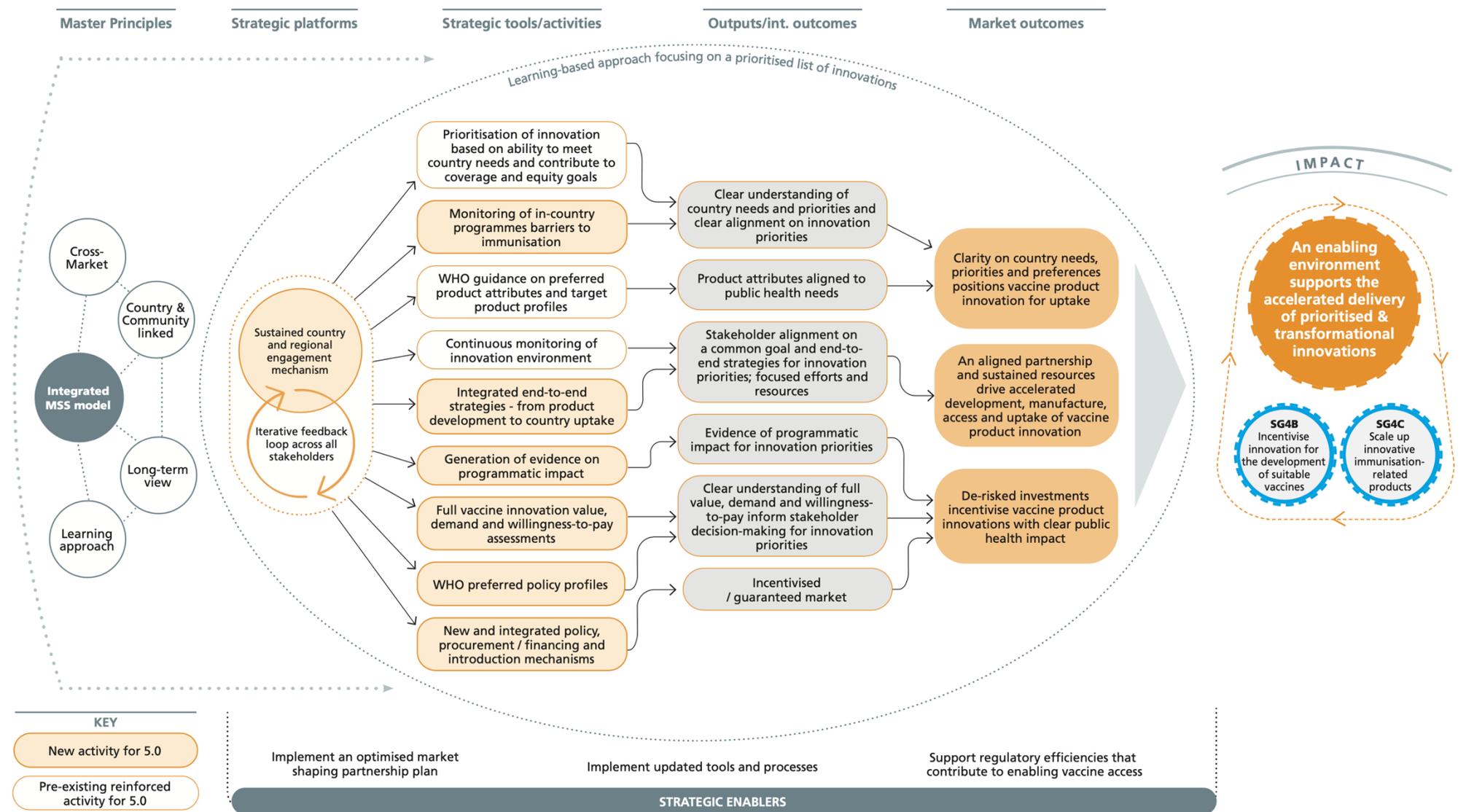
Theory of Change : Future supplier base



Theory of Change : Support healthy demand



Theory of Change : Establish an enabling environment for transformational innovation



Annex B: Strategic enablers

1. Implement an optimised market shaping partnership plan

The market shaping partnership 5.0 must evolve to be in a position to address three trends related to the partner ecosystem

Increasing breadth, complexity, and speed of change in vaccine markets. Gavi and partners are engaged in shaping an increasing number of markets, with more diverse issues to consider, an increasing number of manufacturers to relate to, new ambitious initiatives, and likely disruptive influences from COVID-19.

Expanding scope of MS actors. During 4.0, core partners increased expertise and resources on market shaping, while new technical and global health partners are engaging in the markets. This provides opportunities for increased impact and carries the risk of overlaps, dilution, or misalignment.

New market shaping focus areas expanding to demand health and a more comprehensive innovation strategy.

The current Partnership model offers a good base on which to build

Coordination and decision making: during Gavi 4.0, Gavi-MS, BMGF-VDCP, UNICEF-SD and WHO-IVB informally created a 'square' partnership of market shaping leaders from each organisation committed to meeting regularly, aligning on market approaches, and collaborating to solve market challenges affecting Gavi and MIC markets of interest. Factors that contributed to the success included alignment on annual priorities, broader use of the Healthy Market Framework as a shared tool for market analysis, and Gavi vaccine roadmaps to define shared market views, goals, and action plan.

Broad collaboration: There were frequent informal collaborations with other relevant organisations on market shaping initiatives (for example CHAI, PATH, various WHO departments, UNICEF-Program division). Periodic meetings such as the annual UNICEF-SD Vaccine Industry Consultations and the biannual Vaccine Market Dynamic (VMD) convening connect with additional partners, including CEPI, GHIF, PAHO, PATH, and manufacturers. Some disease-control strategic initiatives, such as the Eliminating Yellow Fever Epidemics (EYE) project, support collaboration towards a broad common objective and the sharing of information and views. The VIPS project on innovation demonstrated how collaboration beyond core partners was able to strengthen project outcomes.

Periodic in-depth meetings with individual manufacturers (so-called *roadshows*) grouped on the industrial site senior management from the manufacturer, the 'square' partners, and where relevant experts brought by the partners to review broad disease, public health, supply, demand, market dynamics, and other topics of interest. These meetings helped improve the common understanding of issues, share useful information, and provided an important platform for debate.

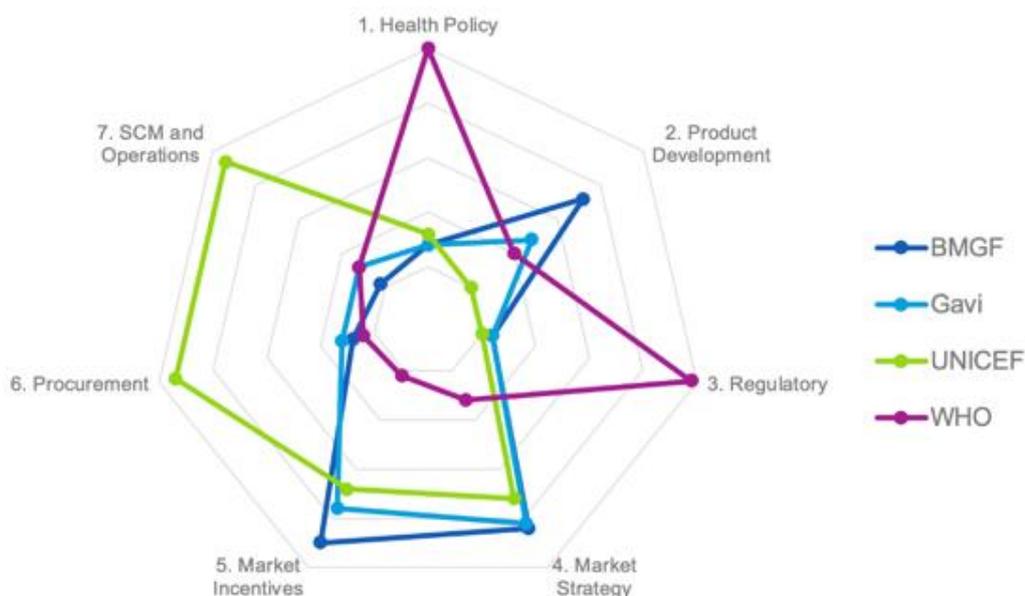
The MSS 5.0 will operate through the Market Shaping Partnership Plan 5.0 defined by a partnership model, an engagement model, and integrated processes and tools. This model is designed to optimise efficiency across organisations, people, and systems to achieve impact. New platforms, tools and processes will be implemented, alignment and coordination systems will be further improved as well as processes and tools to become more dynamic allowing to better adapt to rapid changes in market dynamics.

The Market Shaping (MS) Partnership model

It is a value-based and organisational mandate-based model led by the core market shaping (MS) partners Gavi-MS, UNICEF-SD, BMGF-VDCP, and WHO-IVB.

- **The partnership model is designed around the core market shaping partner's organisational mandates, capabilities, and capacities that are synergistic in value.** The underlying principle is that each partner's success is the partnership's success, where each contribution is leveraged on the basis of its value and comparative capabilities/strengths, where agreed common goals are achieved through coordinated plans, where resources and tools are shared as much as relevant/agreed, and where each organisation's mandate is acknowledged and put to contribution for the common goal.

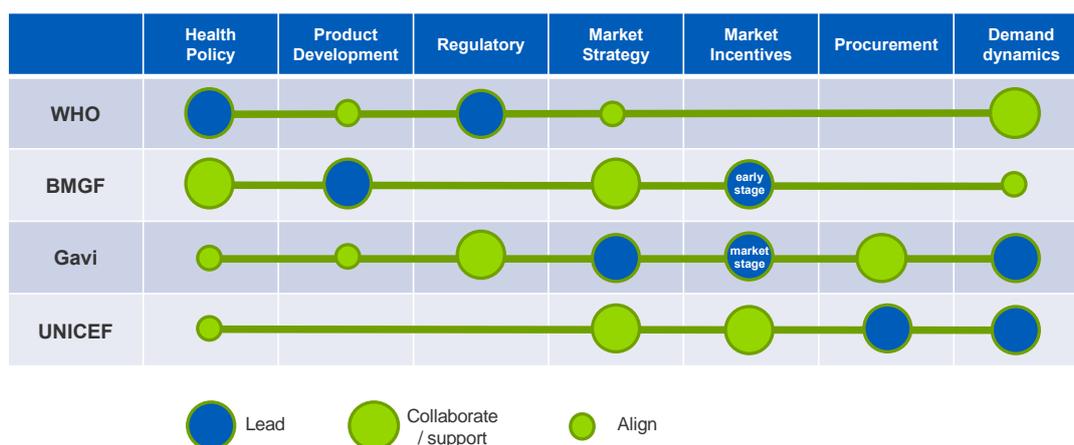
For illustration purposes (draft to be refined), the figure below shows relative capabilities of core MS partners. Collectively, they offer strong and complementary capabilities across the spectrum; UNICEF-SD and WHO-IVB have differentiated capabilities while BMGF-VDCP and Gavi-MS have broadly aligned capabilities although at different stages of the value chain.



- **The MS partnership model 5.0 is reinforced by the intentional and organised integration of other market shaping actors within the Alliance.** The aim is to better develop close coordination and alignment of multiple initiatives beyond core partners and to integrate country insights into market shaping, in particular develop synergies with programmatic and country stakeholders. In 2021, the market shaping partners will map the extended MS partner landscape through a value-chain analysis (mandate, capabilities, capacity, current engagement, etc).
- **The MS partnership model 5.0 will seek to optimize the contribution of the diverse WHO functions** that impact market dynamics by further engaging and coordinating with relevant WHO departments towards the desired outcomes defined in the MSS 5.0.

The MS engagement model and its leadership process

- **The square group is formalised as the Alliance’s market shaping leadership structure.** During 3Q2021, Gavi-MS will lead the drafting of its terms of reference, including role, membership, reporting, and organisational details.
- **Roles and responsibilities will be defined as a function of the partnership model and the square group’s terms of reference.** For illustration purposes (draft to be refined), the figure below shows relative market shaping capabilities of core MS partners as a value chain, the relative concentration of organisational effort, and potential areas of leadership.



In this illustration (may evolve as it is fine-tuned over 2021):

- Health policy led by WHO is strengthened by market shaping related inputs (demand health, innovation) from BMGF, Gavi and UNICEF, and market shaping is strengthened by WHO policy input and discussion.
 - Product development interventions led by BMGF (and CEPI) integrate input from Gavi (VIPS, roadmaps) and WHO, informed by country insight.
 - Regulatory harmonisation and support to markets is led by WHO with support and input coordinated by Gavi.
 - Market strategy is led by Gavi with engagement from BMGF and UNICEF, strengthened by input from WHO and other partners (e.g. CHAI).
 - Market interventions are usually led by BMGF in early stages and by Gavi during market stages with engagement by UNICEF at all stages, the overall management of which will benefit from better alignment.
 - Procurement is led by UNICEF (PAHO leads for its markets), aligned with market strategies (roadmaps and procurement strategies).
 - Demand dynamics is led by Gavi and UNICEF. Country insight and feedback loop mechanisms to be established.
- **The integration of broad market shaping actors will follow the same capacity based principles.** The value-chain analysis mentioned above will be the starting point to define a framework under which to engage, and propose potential roles and responsibilities. Wherever possible, the MS leadership will seek to leverage existing and efficient groups, alliances, projects, and activities, such as VIPS Alliance for innovation. The development of this value chain requires further consultation and agreement.

Integrated processes and tools

- **Terms of reference** of the square group.
- **Harmonised information sharing, market analysis and market reporting.** During 5.0, MS partners will address overlaps and seek synergies for market reporting and information-sharing tools such as roadmaps, market notes, MI4A. It will also explore the possibility of using joint data platforms.

The overall project is outlined in the table below and will start by the definition of an agreed joint market reporting framework based on a mapping exercise and on each organisations' complementary role or mandate, comparative advantages, market characteristics and availability of resources.

The square group will then map options, decide best opportunity, and decide on a supervisory (governance) system.

	Recommendation	Action	Justification / Benefits
1	Harmonize market reporting across core partner publications	Build a common reporting framework and reference guide of market reports produced by UNICEF, GAVI, and WHO	<p>Current reports were developed gradually over time according to specific organisational needs. As a result, they are not optimally integrated, contain overlaps, present different perspectives, and can create some confusion.</p> <p>Avoid potential stakeholder confusion originating from the diversity of similar market information.</p> <p>Opportunity to rationalise and better segment by target audience and by intended usage or impact.</p>
2	Explore creating common information-sharing platform(s) between Partners	<p>Discuss pro's and con's to</p> <p>a) Standardize data sets from market analyses between Partners (Gavi Roadmaps, UNICEF market analyses, BMGF market analyses, WHO market analyses, market information data, assumptions, etc.).</p> <p>b) Standardize market intelligence information across partners, including pipeline information.</p> <p>c) Define and organise access levels that reflect both need-to-know and confidentiality restrictions.</p> <p>d) Explore what resource model could best meet Partner needs.</p>	<p>Ensure transparency of assumptions and models.</p> <p>Improve the strength and breadth of data sets ; integrate all markets of interest to Partners and avoid compartmentalisation related to each organisation's strict remit.</p> <p>Ensure all Partners have access to the best available intelligence that is relevant to their role and that respects confidentiality requirements.</p> <p>Improve the flexibility for data mining and work that rely on common information and data sources.</p> <p>Avoid duplicative work and use of multiple analysis models. Maximise use of scarce specialised resources. Free up Partner's operational time.</p>

- **Manufacturer facing process.** Close coordination on communication and interaction with manufacturers will be further improved to ensure alignment, avoid unintended confusion, and avoid duplication/waste. This will be defined by square partners (4Q2021) and may include revised processes and the definition of leaders according to specific stakeholder, issues and needs.
- **Country-facing process.** Similarly, square partners will analyse the best way to develop an efficient and country-friendly way of developing improved country interfaces. This will be led by square partners with a large consultation process with extended partners and countries (4Q2021/1Q2022). It may also propose revised processes and the definition of leaders according to specific stakeholder, issues and needs.
- **WHO engagement and coordination project.** WHO-IVB will lead the mapping of how various WHO functions, departments and projects may be optimally harnessed to support MSS 5.0 and propose a way forward to the square group.

Summary recapitulation

MS Partnership Plan 5.0

MS Partnership Model

- ✓ Value- & Org. mandate- based model
- ✓ Intentional integration of other MS actors
- ✓ Optimized WHO contribution

MS Engagement model & leadership process

- ✓ Square leadership established
- ✓ Capability-based roles and leads
- ✓ Capability-based integration of MS actors

Integrated Processes and Tools

- ✓ Harmonized Information Sharing, Market Analysis, and Market Reporting
- ✓ MNF-facing process
- ✓ Country-facing process
- ✓ WHO engagement & coordination project

2. Support regulatory efficiencies that contribute to enabling vaccine access

The regulatory processes that manufacturers must navigate to license vaccines often differ in timelines and requirements across countries and regions, creating complexity and inefficiencies. This complexity ultimately translates into delayed access, has potential cost implications and is a cross-cutting issue that impacts supply, demand, and innovation. In particular, lack of harmonisation of technical standards and regulatory processes across countries, limited use of reliance mechanisms, as well as resource-constrained national regulatory authorities are contributing factors that can delay access to vaccines in particular in low and lower-middle income countries.

Much is being done to harmonise technical standards and optimise regulatory systems globally. Building effective and efficient regulatory systems is at the core of the mission of the WHO Regulation and Prequalification department which is leading efforts such as developing guidelines and frameworks for regulatory harmonisation, collaboration, and reliance. Use of these guidelines continues to grow; but challenges remain. Some of these improvements are evident in the

effective use of the WHO's Emergency Use Listing process for COVID-19 vaccines. Whether or not these increased efficiencies will translate into more efficient registrations/authorisations in LMICs in the long term remains to be seen, as these processes in countries are just now beginning to occur.

During Gavi 4.0, Gavi supported activities to improve the regulatory landscape, albeit in an ad-hoc fashion. In the next strategic period, Gavi has an opportunity to redefine its approach to deliberately support targeted initiatives in the regulatory landscape which have the most direct impact on all aspects of SG4 (i.e. supply, costs and innovation) in the mid to long-term. A key principle for Gavi's engagement in the regulatory space will be to ensure its support is complementary to existing and planned partners' support from e.g., the Bill and Melinda Gates Foundation, UNICEF, and others.

- Gavi as well as procurement agencies and governments have come to rely on recommendations included in WHO Prequalification (PQ) Lists. It will therefore be critical for Gavi to continue its **support to the Prequalification Team for vaccines and immunisation devices and help manufacturers navigate the process**. Country experts participating in PQ assessments and inspections could also contribute to national institutional strengthening plans.
- Gavi could also explore the possibility to **support efforts to strengthen national regulatory systems**, in particular if they focus on vaccine-producing countries accounting for an important part of the Gavi-supported vaccines supply with National Regulatory Authorities (NRAs) of Maturity Level 3 (ML3). This could help to address the issue of overreliance on a single NRA such as capacity strengthening need for lot release testing. As a second priority, countries with NRAs close to ML3 could also be targeted, as more NRAs with ML3 could enable a widened use of reliance mechanisms.
- Timelines until NRAs issue a national regulatory authorisation can be a contributing factor delaying vaccine access in LMICs. As an illustration, less than 10 years ago, there was a 4 to 7 years lag between the first regulatory submission (usually to a regulatory agency in a high-income country) and the final approval in Sub-Saharan Africa for vaccines and drugs used to treat certain communicable diseases³. So, to accelerate this process and ensure demand materialisation, Gavi will support: **i.) efforts to raise awareness of existing and future mechanisms and guidelines aimed at optimising regulatory systems** and their relevance for vaccine access and **ii.) support their implementation**. Examples of such mechanisms include collaborative registration procedures (with a focus to ensure they are as performant and widely used for vaccines as they are for medicines), guidelines on good reliance practices in regulatory decision-making (including for lot release testing), guidelines on procedures and data requirements for changes to approved vaccines, etc. This could entail for example supporting regional workshops on implementation of guidelines.
- For new delivery technologies such as those prioritised by VIPS, it will be **important to engage global regulators, WHO PQ as well as regional and local regulators early on regulatory pathways and data requirements** to ensure alignment and avoid unnecessary delays between the end of phase 3

³ <https://doi.org/10.1371/journal.pone.0166515>

and a market authorisation. For other innovative products that are closer to our “traditional” vaccine portfolio, regulatory priorities are similar to those highlighted in sections on foster a sustainably competitive future supplier base and supporting healthy demand.

Targeted support from Gavi to prequalification and regulatory systems strengthening activities with the most direct impact on vaccine access would directly align with WHO’s five-year action plan for delivering quality-assured medical products for all. To note, pharmacovigilance is another critical component of access to safe vaccines, but is not in the scope of the Market Shaping Strategy, as the Monitoring and Evaluation team – with whom Market Shaping is closely coordinating – is the technical lead on this topic.

These regulatory objectives would in-turn contribute to **three desired mid-term market outcomes relevant to the Market Shaping Strategy**:

- **Increased supply and larger supplier base of new quality-assured vaccines and immunisation devices and equipment**, monitored amongst other by the PQ KPIs linked to the annual PQ cohort and time to prequalification.
- **Shorter timelines to in-country regulatory authorisation for vaccines**, with the target set by PQ being 90 days after prequalification, which would inherently enhance the aggregated demand health;
- **More efficient vaccines lifecycle management**, monitored by the PQ KPIs linked to the change assessment cohort, leading with a more flexible approach to approve and switch to post-approval variations of vaccines, allowing for a more fluid supply chain management for manufacturers.

The above market outcomes and KPIs are only indicative, and in the coming months the Market Shaping team will work closely with WHO and other Alliance Partners to identify specific activities as well as the most appropriate KPIs to enable appropriate monitoring and reporting mechanisms throughout Gavi 5.0.

3. Implement updated strategic tools and processes

Healthy Markets Framework and strategy development process

The strategic tools have been updated for the 2021-2025 period to better align with and enable the progress of market shaping’s 5.0 three master principles and three focus areas. The Healthy Markets Framework will bridge the principles and focus areas with how market health is conceptualised market health. Strategy development processes, including the roadmap, will similarly align and bring greater emphasis to long-term market views. The alignment is also reflected through the M&E framework structure and definitions to ensure adequate progress measurement.

Healthy Markets Framework

The Healthy Markets Framework (HMF) is a key strategic tool developed by Alliance partners in 2015 to enable a clear and consistent definition of what constitutes market health. The main aims of the HMF were to: (i) have a common way of thinking about market health; (ii) better communicate how the Alliance

assesses individual markets; and (iii) improve how potential trade-offs between different market elements are analysed.

Based on experience from Gavi 4.0, the HMF has been regarded by Alliance partners and wider stakeholders as being an important first step in taking a comprehensive perspective towards identifying market issues and solutions. Learnings from 2016-2020 have also identified the key limitations of the HMF⁴:

- Need for more formalised representation of demand
- Ambiguity in assessing the individual market attributes
- Lack of clarity on the inclusion of innovation
- Varying applicability across markets
- Masking of variability in health and progress across markets

The HMF is updated to address the above limitations and to align with the Gavi 5.0 market shaping priorities.

Healthy market attributes reflecting market shaping priorities

The new iteration of the HMF is designed to represent the three market shaping priorities by aligning healthy market attributes with the priority pillars, thus ensuring market health considerations reflect Gavi's objectives for the 2021-2025 period. Updated HMF attributes capture market conditions from demand health, supply dynamics, and innovation perspectives.

The addition of demand health attributes is a key change for the new HMF iteration, and allows the framework to be more comprehensive by also identifying market challenges rooted in demand side dynamics. While the other attributes already existed in the previous iteration, they have been reframed to better reflect the concept of supplier sustainability and to clearly align with Gavi's overall 5.0 innovations strategy. These updates also address some of the key limitations identified through 4.0 lessons learned.

⁴ Evaluation of the Gavi Supply and Procurement Strategy, CEPA, December 2020

Detailed HMF attributes and attribute drivers

HMF Attributes		Drivers	
Demand health	Materialisation of demand The degree to which country introductions and campaigns materialise	Global disease management (and CCE) guidelines	Do Global guidelines (i.e. vaccination strategy / schedule guidelines, SAGE recommendations, CCE guidelines) and their timeliness support demand materialisation and/or predictability?
		Donor funding policies and processes	Do donor funding policies, guidelines, processes and decision/approval timelines impact demand materialization and/or predictability?
		Country capacity to effectively prioritise across vaccines and public health interventions	Do countries have sufficient capacity to make vaccine introduction prioritisation decisions, based on available data and considerations appropriate to their context?
	Predictability of demand The degree to which both the quantity and timing of demand can be accurately predicted and sustained by countries	Country regulatory system functionality & harmonisation	Do regulatory process inefficiencies impact demand materialisation (due to delayed access to vaccines/products)?
		Country availability and sustainability of funding for vaccine/CCE programmes	Do country funding availability or sustainability issues impact (or are they expected to impact) demand materialization or predictability over time?
		Country capacity to effectively plan and implement introductions/campaigns	Do countries have sufficient capacity to effectively implement program (disease/CCE) strategies/ guidelines/ decisions?
	Balanced demand of appropriate products & timely uptake of new innovative products The degree to which country product choices are data-driven, value-based; leading to balanced demand for appropriate products & timely uptake of new innovative products	Capacity to accurately forecast needs and demand dynamics over time	Are country forecasting capacities sufficient to predict future demand for products (antigens / presentations / CCE)? Are global demand forecasts well coordinated?
		Country capacity to effectively assess value of product choices & implications	Do countries have sufficient capacity to make evidence-based product choice decisions (intro/switch), based on available data and rational considerations?
		Country willingness to use and pay for available products (including appetite to consider switching)	Is there political will to implement evidence-based product switch or introduction decisions, and pay for value-add innovations? Are there other factors or stigmas impacting usage (e.g., origin of vaccine, vaccine hesitancy, national policies, or religious beliefs)?

HMF Attributes		Market Rationale		
Supply dynamics	Market sustainability & attractiveness	The degree to which the market remains sufficiently attractive for incumbent suppliers to remain or for new suppliers to enter	Potential market size	Is the maximum potential market size, independent of current supplier landscape, attractive for incumbent and new entrant suppliers?
	Geopolitical & regulatory risk	The magnitude of risk that doses cannot be released or exported from the country of production	Long-term incentives	Does the market present sufficient incentives, given its current supplier and pipeline landscape, to keep incumbent and attract new entrant suppliers?
	Supplier base risk	The magnitude of risk that a supplier will be unable to supply expected doses	Sustainable competition	Is the supplier competitive dynamics sufficient and can it be sustained for the long-term?
	Meeting country product preference	The degree to which available supplies can meet countries' product choices	Policy & legislation	Does the country of production have laws that allow the export of doses produced in the country and have a positive track record of lot releases?
	Supply meets demand	The magnitude of risk that a supplier will be unable to supply expected doses	NRA risk	Are NRAs functional with low risk of changing status due to technical or political reasons?
			Supplier diversity	Does the market overly rely on specific suppliers for fill/finish or bulk capacity?
			Supplier technical risk	Do suppliers have strong technical capabilities with low track record of production interruptions or shipment delays?
			Supplier sustainability	Are suppliers' overall business across their portfolios viable?
			Products meeting country programmatic needs	Are the characteristics of available products programmatically suitable for countries?
			Buffer capacity	Are there additional supply available to meet unforeseen increase in demand or decrease in supply?
			Global demand level	Is supply sufficient to meet demand at the global level, including non-Gavi MICs and HICs?
			Meeting Gavi demand	Is the volume of doses offered to Gavi supported countries \geq the volume of demand required by Gavi supported countries?

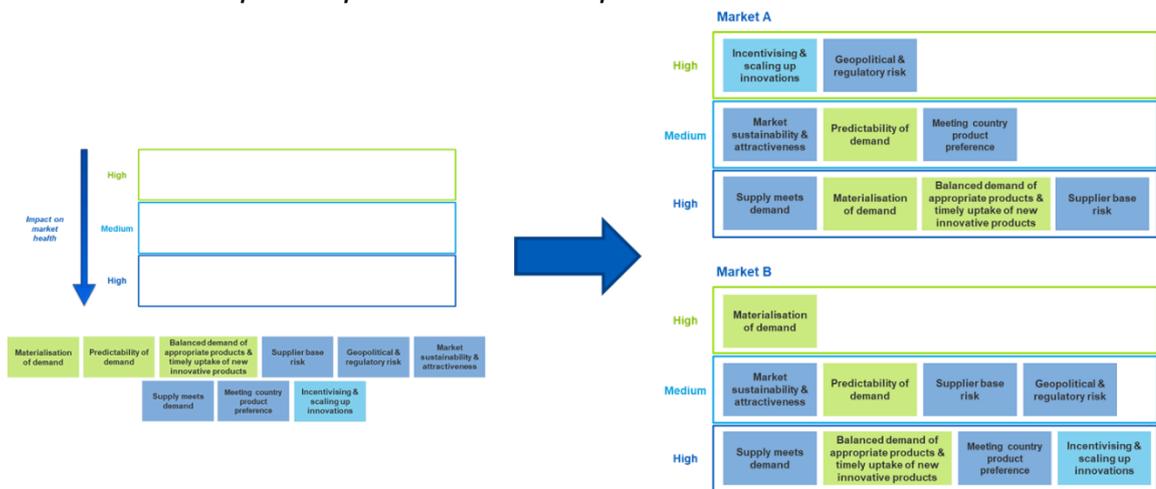
HMF Attributes			Market Rationale	
Innovations	Incentivising & Scaling Up Innovations	The degree to which ongoing innovations address countries' unmet needs and may be adopted by countries in the future	Clear pathway to country uptake	Is the pathway to country uptake for the innovations is clearly defined? (e.g., SAGE policy, procurement / financing mechanism, introduction pathway)?
			Clear public health value / impact	Do innovations provide a clearly articulated public health value / impact, i.e., expected benefits / trade-offs?
			Clear country needs	Do innovations in the pipeline address clear country needs not met by available products?

Diversity of market conditions that define market health

Vaccine markets evolve along different trajectories, and the markets that Gavi operates in are in varying stages in their evolution towards market maturity. Different types of markets (e.g., routine versus outbreak vaccine markets) will also vary in their conditions and needs, even when in the same stage of market maturity.

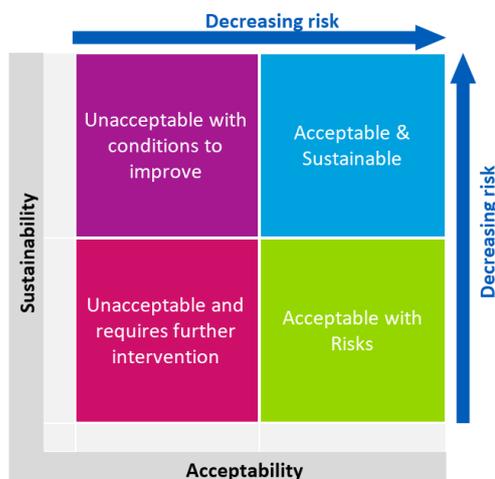
In order to provide the flexibility needed for a single framework to capture the nuances of different market types and market maturities, attributes may be assigned different priority levels specific to each market.

Illustrative examples of potential market-specific HMF structures



The flexibility in attribute structure allows the HMF to clearly signal within the context of specific markets whether market challenges are detrimental to market health and require urgent intervention or are within the limits of acceptable risks and thus require no intervention. Market health categories have also been redefined based on acceptability of market conditions and risks, so a portfolio view of all markets within which Gavi operates can better communicate the relative health amongst markets.

Updated market health categories



Unacceptable and requires further intervention:

- Majority of high and medium impact attributes are unmet
- No improvement is expected without further Alliance intervention

Unacceptable with conditions for improvement:

- Majority of high and medium impact attributes are unmet
- Improvements possible and expected with lead time to materialise

Acceptable with risks:

- Majority of high and medium impact attributes are fully met or partially met
- Interventions are required to mitigate risks

Acceptable and sustainable:

- Majority of high and medium impact attributes are fully met or partially met
- Monitoring required to ensure risks to not increase

Revised Alliance Market Strategy (Roadmap) development process

The publication of Gavi’s roadmaps facilitates a critical role in defining market shaping activities, agenda setting, and creating collective action between core alliance partners. Roadmaps articulate individual product strategies, direct Gavi’s actions within specific markets to align market-shaping objectives across the Alliance partners, and to inform procurement decisions.

During the Gavi 5.0 strategic period roadmaps are expected to undergo a distinct evolution from the previous period where the primary purpose of roadmaps was to facilitate transparency and information sharing between core partners and to set a precedent for understanding market behaviour. Since then, increasing sources of information are available across the partners for communicating the alliance’s market objectives within this matured information ecosystem, the 5.0 period will focus on

restructuring the roadmap process to promote a long-term view of vaccine markets while improving process efficiencies and synergies.

The four key roadmap update goals

	RM Goal	Roadmap Update Gavi 5.0 Solution
Roadmap Process	1 Improve roadmap review & tender alignment process	<ul style="list-style-type: none"> Restructure roadmap process into two alignment categories: <ol style="list-style-type: none"> Longer-term strategic view: Introduce new high level strategic goals, which provides flexibility for tender alignment, potentially overarching multiple tender periods Short/midterm view: Introduce detailed working document for frequent partner alignment, provides flexibility to adjust to market dynamics
	2 Increase coordination & harmonization with partner publications	<ul style="list-style-type: none"> Increase alignment between partner’s market analysis/assumptions, coordinate between three core publications (UNICEF market notes, WHO market studies, Gavi Roadmaps) Align roadmap adjustments with partner optimization workstream agenda
Roadmap Content	3 Emphasize long-term perspective & extend roadmap shelf-life	<ul style="list-style-type: none"> Move towards high level strategic long-term content and away from prescriptive writing Supplement the reduction of overly detailed Target Outcomes/Intervention by revitalizing the online roadmap action plan tool to not lose critical project tracking information Cut back on none-essential market intelligence data in roadmaps, this will extend the shelf-life of the content, which will be supported by the exploration of a centralized market intelligence platform.
	4 Improve efficiencies in document creation & stakeholder feedback	<ul style="list-style-type: none"> Shorten the Roadmap publication, cut lengthy, none-essential text, annex overly specific content Streamline roadmap drafting/consultation process through targeted editing request: guide partners towards specific commentary, improve workshop expectation setting, move towards focusing on critical high-level feedback

Roadmap process and content update: The roadmap update will focus on increasing efficiencies, and better alignment to partners needs through both process and content solutions. Previously, the intensity of roadmap creation often led to tender misalignments in timelines and unmatched target objectives to procurement agendas.

To facilitate better tender alignment and streamline the drafting process during the 5.0 period, the roadmap will be separated into two primary documents: first a high-level strategic document which will outline longer-term market objectives (e.g., representing a 5+ year time horizon), and second a short/midterm working document that will undergo more frequent (e.g., annual) review by partners. As seen in the *Roadmap Update in Market Shaping Activities* diagram, this structurally changes the approach to developing roadmaps through splitting long-term and short-term agendas and will create an aligned long-term vision for each market.

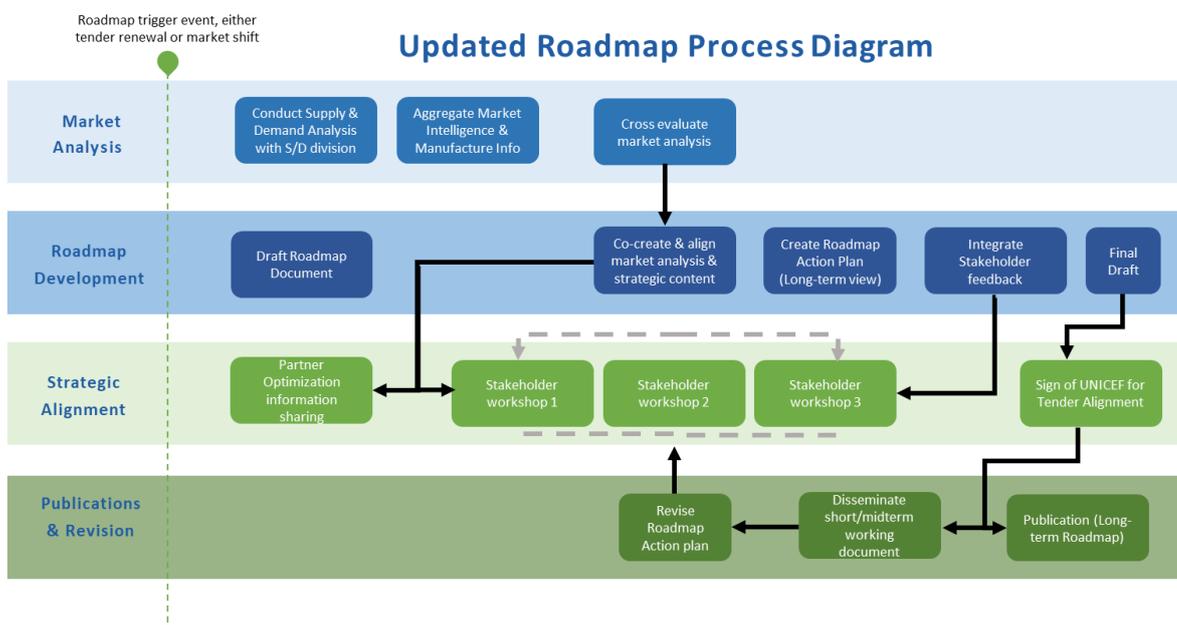
Additionally, this solution creates an opportunity for integrating partner feedback and achieving comprehensive alignment on a more frequent basis.

Roadmap Update in Market Shaping Activities



A move towards high-level content will be further supported by the solutions proposed in goal 3, which include an update to the roadmap action plan tool and the exploration of a market intelligence platform for improved knowledge management and analysis. Lastly, goal 4 establishes an intentionality to significantly streamline the roadmap creation process in drafting, editing, and capturing partner feedback in a more targeted and thoughtful way.

Roadmap alignment with Alliance Partners: While Gavi's roadmaps initially filled a critical gap in the market by providing a consolidated analysis for each vaccine, now an increase in partner publications provide similar analysis (i.e., UNICEF's market notes, WHO's MI4A market studies) both now presenting a wide lens perspective on market dynamics. To reduce redundancies and streamline efforts, the Roadmaps will aim to better synchronize and rely on market analysis with partners where possible, see *Roadmap Process Diagram*.



Critically, any alteration in the roadmap development process which relies on partner agencies will interlock with the partnership optimization workstream. To better facilitate information sharing and address reporting overlap, alliance partners aim to 1) harmonize market reporting across core partner publications and 2) explore a common information-sharing platform between partners. For both agenda items, roadmap information may be evaluated and adjusted to better harmonize between partner information-sharing needs.

As a strategic tool working in tandem with the healthy market framework, roadmaps are a cornerstone in agenda setting for market shaping, these updates illustrate an intentional shift towards developing a longer-term strategy that improves team operations and better aligns with partner needs during the 5.0 strategic period.

Demand Health toolkit

Tools, information provision and targeted technical support

A tool kit is available to support country processes and decision making, including vaccine programme prioritisation and product choice assessments, supporting countries to better evaluate benefits and shortcomings between different choices available for introduction and switch. The Alliance's strategic priority to support healthy demand will depend on enhanced and coordinated capacity building efforts, to ensure resources and tools are appropriate and directed to meet the needs of the most important demand health challenges.

A comprehensive (although not fully exhaustive) list of these information and decision support resources is below:

- **Detailed product profiles** and **Vaccine Product Profiles** on the Gavi Website are publicly available to showcase the different characteristics of different presentations available for Rota, PCV and HPV including programmatic and epidemiologic features.
- **CAPACITI (Country led Assessment for Periodisation on Immunization Decision support tool)** is a WHO-developed decision-support tool to support EPI to prioritize among multiple immunization products, services or strategies, targeting the secretariat or core team within the NIP (national immunisation programme) or MOH (ministry of health) that is tasked with coordinating the recommendation process, standing committees such as NITAG and Inter-agency Coordination Committees (ICCs).
- **Vaccine Cost Calculator** developed by PATH supports decision-makers, implementers, technical assistance partners with comparison of products and estimate vaccination program costs for different vaccine products and presentations, exploring multiple vaccine options (for HPV, PCV and Rota) at a time based on already limited set of local data.
- **UNIVAC (universal vaccine impact and cost-effectiveness decision support model)** focuses on providing estimates of the direct impact of vaccination among vaccine recipients. The CDC/BMGF funded tool allows users to run scenarios of the impact of various vaccines based on the user's country input data selected, featuring automated calculations, options for sensitivity analysis and automatically generated results charts and figures.
- **NITAG Resource Centre** is run by the Global NITAG Network (GNN) and the WHO, is a centralized resource providing access to NITAG recommendations

from around the world, scientific publications, technical reports, systematic reviews and WHO Position Papers.

In addition, targeted country technical support is available to enhance in country processes and decision-making capacity.

- **CHOICES (Choice Optimization in Immunization: Country Exercises for Sustainability)** is a grant-based initiative (limited in time and scope) that aims to i) equip global partners with evidence-based resources, guidance, and frameworks to support countries in strengthening their decision-making, and ii) empower and equip EPI in LIC/LMIC to navigate expanding vaccine product and schedule options and implement optimized, comprehensive communicable disease prevention and control programs, covering Rota, PCV, MR and HPV.
- **Gavi country Leadership, Management and Coordination (LMC) support** aims to strengthening government EPI teams at the national level (or subnational level where relevant) with the objective to improve their structures, capabilities, processes and practices. In addition, the technical assistance intends to boost national coordination forums, such as ICCs or health sector coordinating committees (HSCCs), to improve their functionality. As a third are of scope and most importantly from a country vaccine presentation choice perspective, the LMC aims at enhancing the ability of NITAGs to advise countries on their immunisation programmes.

Guidelines to mitigate market failures driven by unbalanced demand

Definition: Healthy demand from a market perspective is defined as a state when programme **demand materialises** as expected, when the quantity and timing of demand can be **sufficiently predicted and sustained** over time, and when country product choices are evidenced-based and implemented with minimal delay, leading to the **balanced uptake of appropriate products** and the **timely uptake of new innovative products**. In short, demand should be timely, predictable, sustainable, balanced, and driven by evidence-based decisions and up-to-date policies.

Challenges caused by unbalanced demand: Healthy markets should exhibit balanced demand across product offerings, where country product preferences are understood, products offerings (i.e. value propositions) are well understood, and country choices are evidence-based; met by supply of appropriate products from a sustainably competitive supply base. However, when demand is not balanced across product offerings, this has potential to negatively impact healthy market outcomes (including short-term supply availability, or longer-term risks to supply security, competition and/or innovation), which can impact or risk other Gavi strategic goals.

Where demand-side interventions are considered to address these market failures, trade-offs must be appropriately assessed and evaluated via a systematic decision pathway.

Demand health intervention decision guidelines for addressing demand imbalances: The following guidelines are intended to provide a systematic approach and transparent decision pathway based on market health impact (both risks and opportunities), ensuring the appropriate partners are engaged to evaluate any health impact and programmatic considerations or other risks (such

as reputational risk); bringing focus, coordination and accountability across Alliance partners.

- **Identify root cause:** The root cause of the current or potential future demand imbalance needs to be understood (using 'HMF' definitions). Led by Gavi market shaping with support from Roadmap stakeholders and disease subgroups.
 - For example: Is the root cause demand- or supply-side? Is the issue driven by multiple root causes (e.g. global guidelines, regulatory barriers, decision-making capacity, information availability, willingness to pay etc)?
- **Severity of the market failure:** The potential impact of the market failure should be quantified and articulated; considering both market and supplier base outcomes, and risks relating to SG1 (e.g. programme interruption or delays impacting number of vaccinations missed) and SG3 (e.g. cost and sustainability issues).
 - 'Highest severity' with immediate impact: Imbalance issues with clear/quantified short-term impact to SG1 (e.g. manufacturer of 'preferred' product experiences unexpected supply interruption, requiring countries to switch to alternative product to avert program interruptions)
 - 'High severity' with longer-term impact: Imbalance issues with clear/quantified impact on market health and longer-term risk to SG1 (e.g. skewed country preferences to single/dominant product disincentivising manufacturer(s) of alternative products to stay in the market or scale-up to meet potential future demand)
 - Moderate severity with longer-term impact: Imbalance issues with impact on market health, but without clear/quantified impact on SG1 (e.g. supply of incumbent products meet demand and limited country appetite to consider switching to lower cost new products, limiting market health opportunities to be realised (supplier security, competition, pricing); but no clear quantification of impact on coverage or equity)
- **Type of intervention required + trade-off with country choice:** Severity and root cause will influence the type of intervention.
 - Interventions addressing issues of high severity with immediate impact will normally be driven by unexpected events, where Alliance partners need to work in **operational mode** to influence country preferences/choices and avert programmatic failures (e.g. stock-outs, introduction/campaign delays). Work is guided by **existing mandates of Alliance organisations**, with UNICEF-SD taking the lead, and the Gavi Secretariat closely supporting (in particular with targeted country communications). Interventions should consider:
 - Minimizing number of children missed with vaccination, with the priority to already established programmes

- Enable most rapid implementation
- Minimize the number of affected countries
- Mitigate the risk of a 2nd disruption and consider market implications
- Mitigate additional financial burden for countries (no/limited extra costs due to switching)
- Maximize long potential upside and net benefits such as lower price, reduced cold chain requirements, etc.

Country context should also be considered, including:

- Country has previously interest in switching
 - Switch materialize in benefits for the country (sustainability/ efficiency)
 - NITAG has previously reviewed/ recommended the new product
 - Cold Chain Capacity is capable of rapid implementation
 - Alliance Partner support to/in country
 - Country is eligible to receive switch grants
 - Country has not been forced to switch the same vaccine in the last 2 years
 - Country Switch does not pose (major) risk to the overall health of the market
- Interventions addressing imbalance issues with longer-term impact of moderate to high severity should be defined through the **Alliance Market Strategy (Roadmap) development process**. Severity may determine the appetite to, and appropriateness of interventions to, influence country choice. Root cause(s) will define range of other interventions and leading/involved Partner's. The Alliance 'Square' group or Gavi executive office may be required for decision, depending on the level of severity and risks associated with potential interventions. Programmatic Alliance partners should be engaged to support evaluation of any health impact and programmatic considerations or other risks (such as reputational risk), as well as inputs into and planning/coordination of interventions.
- Imbalance issues of high severity with longer-term impact would consider interventions that have direct **influence on country choice** (where other demand- and supply-side interventions are not feasible). Gavi Secretariat market shaping would lead these interventions (relating to Gavi74 countries), in close collaboration with Square partners. Given the risks associated with influencing country choice, these potential interventions would need to be guided by **inputs from relevant/appropriate programmatic Alliance partners** (e.g. antigen working groups / sub teams that bring together Senior Programme Managers, vaccine experts from the extended Alliance partners such as CDC, John Hopkins University, PATH and Clinton Health Access Initiative). Interventions with a high degree of influence on country choice should be taken to the **Alliance 'Square' group for decision**. Highly interventionist activities carrying risks should be taken to the **Gavi Secretariat executive office for decision**. Implementation would require close collaboration with Senior Programme Managers, Senior Country Managers and Square partners.

- Imbalance issues of moderate severity with longer-term impact would likely define 'softer' interventions (not directly influencing country choices) targeting the root cause(s) and led by relevant leads (e.g. WHO will take the lead on issues driven or influenced by global guidelines and relevant regulatory challenges; Gavi Secretariat will take the lead on funding policies, operational processes, including switch and new vaccine support guidelines; BMGF might take the lead on targeted country capacity strengthening). Intelligence gathering may be a priority to strengthen understanding of future risks, guiding need for additional intervention.

Product Portfolio Management

Vaccines

Vaccine Investment Strategy (VIS) decisions to include a new antigen in the Gavi portfolio are informed by analyses of impact, cost, and cold chain requirements, amongst other attributes, as they relate to the available or expected vaccine presentations and products for the antigen. However, beyond the antigen approved by the Gavi Board, the decision does not specify which specific product presentation(s) are to be offered to countries and then procured through Gavi's procurement agencies.

The following principles guide the Gavi Secretariat for adding a new vaccine presentation or product to the Gavi 'product menu':

1. The new vaccine presentation or product must be **consistent with SAGE recommendation(s)** and the relevant WHO position paper (where one exists) for the related antigen.
2. The new vaccine **presentation or product must be WHO prequalified**, unless a compelling reason to make an exception exists (e.g. to provide countries with a new vaccine presentation in a manner timely for uptake of this new presentation with as few delays as possible following first availability to enable a shift to a preferred presentation for programmatic and/or cost reasons, and where WHO prequalification is anticipated).
3. The new vaccine presentation or product must have a **reliable supply base**. Adding the new presentation or product to Gavi's 'product menu' should contribute to an environment of consistent and uninterrupted supply. The product should be manufactured by a reliable supplier and be available in sufficient quantities to contribute to the supply base without creating risks to supply security.
4. The **estimated costs** of the new vaccine presentation or product should be within the range of the current fully loaded, wastage-adjusted vaccine costs to immunize an individual and should account for any increased procurement

costs that are commensurate with evidence-based benefits of the new vaccine presentation or product and/or with decreased costs in vaccine delivery.

5. The new vaccine presentation or product must be likely **to respond to country demand and preferences**. Where required to avoid supply security risks or to further other market-shaping objectives, a new presentation may be added to replace an existing one (e.g., a 2-dose vial presentation may be replaced by a 5-dose vial presentation, rather than expanding the market to include both presentations).

When the above conditions are met, the procurement of the new vaccine presentation or product is considered to fit, in principle, in the context of the original Board decision. The presentation or product would then be added to the ‘product menu’ and offered to countries. On occasion, the Alliance might need to limit the choices offered in the portfolio, for the purpose of consolidating demand, leveraging purchasing power, or ensuring uninterrupted supply. Decisions on active portfolio management will be taken in consultation with countries and communicated to manufacturers in a timely manner to prevent interruption of programmes and supply.

Immunization-related devices

A new set of principles are ***under development in 2021*** to guide the Gavi Secretariat on procurement management of other immunization-related devices, including vaccine delivery devices (with exception of syringes for injection/reconstitution and safety boxes, as well as cold chain equipment that is covered below). These are expected to include the 5 principles mentioned above as well as a few additional criteria that consider: (1) impact of new devices on equitable access and coverage of the associated Gavi-supported antigen(s); (2) adaption for use by healthcare workers; (3) acceptability of device by parents and children; and (4) potentially other factors. The updated PPM principles will be published on Gavi’s website.

Cold Chain Equipment

With regards to CCE, Gavi only supports equipment included in the WHO Performance Quality Safety (PQS)⁵ Catalogue that meets the following requirements:

- User-independent (“Grade A”) freeze protection to prevent freezing of vaccines,
- Extended operating temperature range to ensure the equipment operates correctly even during large changes in ambient temperature,
- Temperature monitoring and logging to assure better temperature control of vaccines,
- Voltage regulation (for on-grid devices only) to protect equipment from electrical damage, and
- Countries are considered the owners of data generated by CCE procured through the CCEOP.

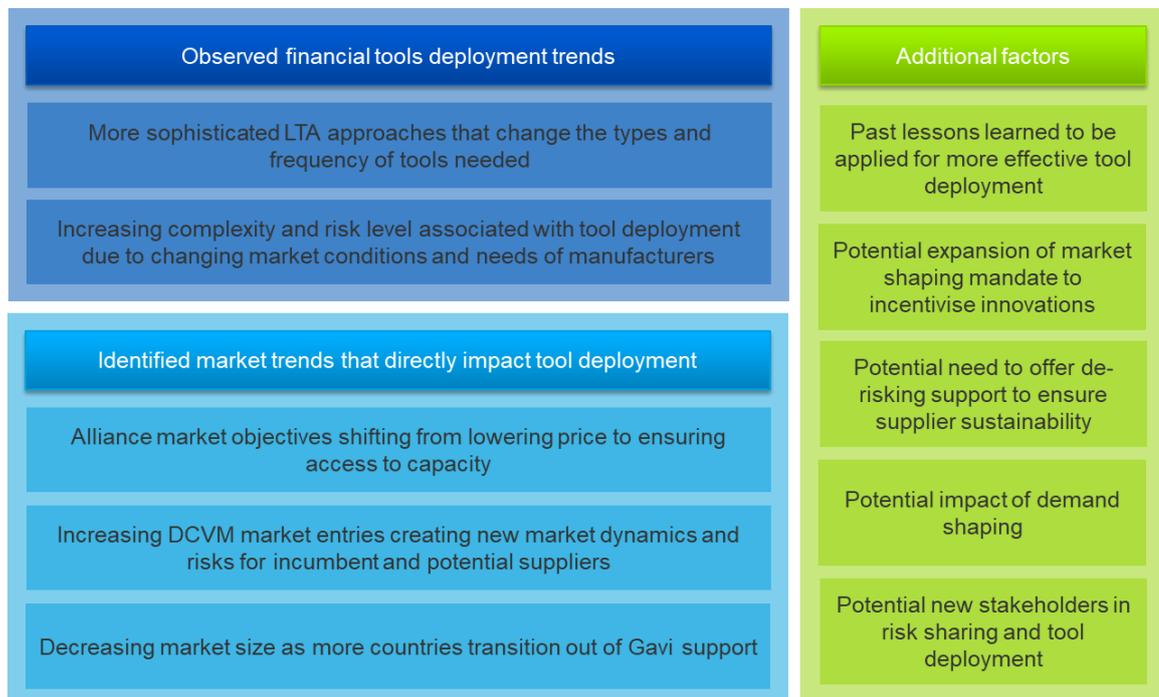
⁵ PQS qualification means that a device has passed a series of performance, quality and safety tests set by WHO

Financial tools

The Alliance has in place an established set of financial tools that help achieve desired market outcomes. The deployment of these tools has been tailored to specific market needs and conditions, and in certain situations has been a critical part of Gavi’s market shaping interventions.

While partners recognise the continued importance of these financial tools, the market landscapes in which tools are deployed have drastically shifted. Emerging and shifting trends create different risk profiles for tool deployment and new market challenges pose more complex trade-off decisions.

Summary of trends and factors impacting deployment of financial tools



Given the above considerations, it will be important to ensure financial tools decision-making and deployment continues to evolve and closely links up with market strategies guided by MSS 5.0, to ensure the increasingly complex market conditions and manufacturers needs are appropriately considered.

Annex C: lessons learnt from detailed demand case studies

HPV	Healthy market and programme evolution can benefit from greater and longer-term focus on demand health drivers
Rota	Complex product offering with late availability of WHO guidance leading to switch hesitancy and limited countries' evidence-based decision making
PCV	Evidence based country decision making with limited data available.
MR	Limited uptake of MR 5-dose amid Measles coverage challenges
TCV	Balancing demand uptake and supply capacity
CCE	Competitive dynamics benefit from a calibrated intervention on country choices.

HPV: Healthy market and programme evolution can benefit from greater and longer-term focus on demand health drivers

- A supply- and demand-side mismatch since SAGE recommendations in 2016, despite the disease elimination efforts and Gavi policy supported, highlights potential benefit from longer-term planning, greater synchrony, and better transparency going forward.
- Forecasted demand for HPV did not materialise between 2013-2015 and the response of suppliers to scale-up supply from 2016, after the new Gavi programme started, was possibly delayed due to concerns around the credibility of HPV demand forecasts showing increased vaccine uptake. This highlights the importance of forecast accuracy, of early communication of forecast nuances as well as of manufacturing considerations and timelines, and a common understanding of potential demand scenarios.
- Manufacturer's planning and decision making should be taken into consideration, especially in markets with demand uncertainty. Interventions to be considered could include approaches that require market commitment, while identifying alliance's appetite for risk.
- Country product decision-making and the factors influencing that, such as a general perception amongst countries that more serotypes are better for cancer prevention (despite evidence that the two available vaccines provide similar levels of cervical cancer protection) is a key reason that led to a dominant supplier situation and a reduced supply outlook for the lower valency product, and question marks concerning future country product choice.
- Improved understanding of country preferences and if/how the Alliance can facilitate uptake of existing and new products going forward, including how countries can use product and market information to make informed decisions about their vaccine programmes in the context of their epidemiological needs. These lessons apply to other vaccine markets with similar challenges, such as PCV and rotavirus, where preferences and inflexible pricing out-of-market could lead to serious market failures.

Rota: Complex product offerings with late availability of WHO guidance leading to switch hesitancy and limited countries' evidence-based decision making

- Before 2018, two prequalified manufacturers provided vaccines to Gavi-supported countries with a clear country preference for one of them, driven by evident advantages (cheaper price per dose, shorter schedule, smaller cold-chain footprint). In 2018, vaccine presentations from two additional manufacturers were prequalified

by WHO and currently, eleven vaccine presentations from three manufacturers are available on the Gavi menu, with significant profile differences (price per dose, valency, dose schedule, administration complexity, doses per vial, cold chain footprint, and cold chain temperature requirements).

- The introduction of different formulations, vial sizes and VVM types for each product offered a variety of options to meet country preferences, but also added to the complexity of the decision-making process in country. This delayed switch implementation and surfaced the fact that some countries are either not fully equipped for evidence-based decision-making (functional NITAG, EPI bandwidth, data, and data-driven tools) or make choices that do not fully rely on evidence (e.g. requesting a frozen formulation despite having insufficient frozen cold chain):
 - Some countries impacted by supply disruptions in 2018 and 2019 decided to delay their introductions, sticking with their preferred product choice rather than switch to available products.
 - Two countries decided spontaneously to switch presentations in 2019 but faced difficulties in defining the most adequate presentation which resulted in changes to their switch request.
 - One country spontaneously requested a new presentation, driven by high level awareness of new option, but realised after the Decision letter was issued and the PATH cost comparator was available, that a smaller vial one was even better. Both options were on the menu at the same time
 - Upon transition, one country suddenly switched to a lower price per dose product alternative, without consulting UNICEF. The country did not factor in freight costs and complexity that resulted in a higher total cost and decided to switch to another option.
- Furthermore, an issue with funding/procurement process nomenclature to identify presentations (reliance on valency as opposed to brand names) resulted in errors in country applications.

PCV: Evidence based country decision making with limited data available

- Over the last decade, the Gavi PCV market has been a duopoly with significant capacity expansions to meet Gavi and Global demand, and with the arrival of new multi-dose vial presentations during Gavi4.0, lowering the country cold chain capacity requirements and decreasing prices.
- This market dynamic was expected to shift with the arrival of the first DCVM-manufactured PCV (PCV10-5) in 2020, with a 30% lower price versus the price of incumbent presentations. However, since launch actual introduction has been limited to 1 country (self-financing), with 2 selecting it as a preference.
- Potential barriers impacting uptake of new entrants include:
 - Lack of WHO position on the new vaccine;
 - Country hesitancy to be first launch country for a new vaccine; including uncertainty of supply availability (despite, in the PCV example, the manufacturer's reliability with regards to other vaccines such as MenA, MR and Pentavalent);
 - Stickiness to current presentations particularly for countries with limited decision-making capacity, burdened with other priorities such as other vaccine introductions or campaign preparations, outbreak responses related to Covid-19, measles or other diseases;

- Initial self-financing countries' lack of financial incentive to switch to a significantly cheaper vaccine due to the fixed co-financing component.

MR: Limited uptake of MR 5-dose amid Measles coverage challenges

- The measles and measles-rubella (MR) vaccine market have been characterized by volatility due to increased demand for Supplementary Immunization activities (SIA), necessary from an epidemiologic nature and countries introduction the Rubella containing vaccine, which is linked with a large multi-age cohort (MAC) introduction catch-up campaign. These SIA are recommended for countries with coverage levels below 95%. After decades of predominantly using a 10-dose vial for both, RI and SIA, the PQ of a 5-dose vial has been promising in supporting to reach the “fifth child” via RI, by potentially reducing health care worker hesitancy to open a 10-dose vial for single or very low patient volume vaccination sessions. Besides the Government of India, that switched the EPI to a 5-dose regimen after completing the MR Introduction campaigns nationwide, demand for the 5-dose vial in Gavi countries has been austere with less than 5% of the total MR and less than 2% of the measles demand. This uptake challenge is caused by various aspects:
 - lack of cost benefit awareness with a 5-dose presentation as of 13% reduction in absolute wastage is expected from what a country reports with 10 dose;
 - lacking wastage data, which is hardly available across subnational levels and could make the above-mentioned economic case for the 5-dose price premium;
 - reluctance of countries using two presentations in country and the 10-dose being the preferred one for SIAs which receive most resources from a HR, planning and operational costs perspective;
 - lack of separate accounting and stock management as SIA and RI earmarked doses are often “merged” due to logistical (distribution) or time (delivery) constraints;
 - data scarcity on Missed opportunities of vaccination due to non-opening/reconstitution of a 10-dose towards the end of the vaccination session to avoid wastage
 - standardisation of a recommended 30% vial opening threshold for the 10 dose which has been modelled as most effective with regards to associated medical costs and disability-adjusted life years (DALYs).

TCV: Balancing demand uptake and supply capacity

- Typhoid conjugate vaccine (TCV) being the most recent Gavi-supported RI antigen, the market has experienced a casualty dilemma. Initially, supply has been lagging and the first large Gavi-supported country, Pakistan, has been forced to introduce in (three) phases. Two years later the current supply side has achieved significant capacity expansions and is likely on track to run into an overcapacity over the next couple of years with demand lagging behind. While one of the two PQ suppliers could likely cater the entire volumes, the objective to reach a diversified supplier base will lead to a carefully developed award strategy which poses potential challenges for manufacturer's sustainability and economies of scale.
- The Alliance already engages to support countries to apply by developing and accepting more creative ways to analyse and quantify their disease burdens, but more demand side activities are likely needed to increase the number of introductions and improve operational readiness in order avoid fierce market competition with overcapacity characterised by incumbent and numerous late-stage pipeline suppliers.
- TCVs differ in terms of carrier proteins that they are conjugated with. Due to the current lack of evidence and guidance on the individual PQed TCV's performances such as the efficacy in the carriage stage and in bacteria shedding which highly influences the coverage level needed to achieve herd protection, the Alliance decided upon comparability towards an allocation model in which countries do not chose a

specific brand but a presentation with parameters such as 5-dose, multidose vial, liquid, intramuscular and 1dose schedule.

CCE: Competitive dynamics benefit from a calibrated intervention on country choices.

- The original Cold Chain Equipment Optimization Platform (CCEOP) market shaping goals included accelerating innovation, improving supply and reducing the price for critical CCE such as ice-lined refrigerator (ILR) and solar direct drive (SDD) equipment. However, despite several suppliers quickly bringing innovative products to market in the early years of the CCEOP most countries demonstrated an overwhelming preference for two incumbent brands. This led to a market duopoly, with a clear market leader in both the ILR and SDD market segments. This lack of market competition has led to less equipment procured overall given the higher prices offered by one of the incumbent brands, as well as the risk of exits by smaller suppliers and the risk of declining incentives to innovate by all suppliers.
- As a result, a demand shaping intervention was implemented in high volume countries, whereby these countries were requested to allocate at least 25% of their procured volumes from non-dominant suppliers. This intervention has largely been successful, though shifting country preferences often results in delays in the overall process and in some cases protracted decision making by countries. Shifting preferences to new brands has also been made more difficult by a lack of field performance data and differentiated products and service offerings (difficult to compare). So far this has been successful in mitigating the duopoly, but most of the benefits were realized by a third supplier, and it is not yet clear if “stickiness” to incumbent brands will persist once performance data on newer brands is available and communicated or if the 25% allocation would no longer be a requirement.
- In general, there is a need to better sensitize countries to all CCE options, provide targeted guidance to help countries compare different product features, and achieve greater product standardization going forward. In addition, having countries select multiple brand preferences at the application stage (rather than during the procurement process) may help avoid delays and catalyse greater country openness to multiple brands.



Annex D: M&E framework: Gavi 5.0 SG4 indicator technical reference sheets

Indicator name	Healthy Market Dynamics
Strategic objective	SG4 – Ensure sustainable, healthy market dynamics for vaccines and immunisation-related products at affordable prices
Level of reporting	1 – Goal
Indicator definition	Number of markets exhibiting acceptable levels of healthy market dynamics
Numerator	Number of vaccine and CCE markets assessed to have acceptable healthy market dynamics
Denominator	All Gavi supported vaccine and CCE markets
Data type	Number count
Level of disaggregation	By individual vaccine and CCE market
Frequency of reporting	4 – Annual
Responsible team	Market Shaping
Rationale for use	<p>Since 2016, Gavi’s market shaping objectives have shifted towards a holistic approach defined by the Healthy Markets Framework (HMF). Under the HMF approach, a fundamental attribute of a healthy market is having sufficient supply security to ensure sufficient and uninterrupted supplies of appropriate vaccines to countries. As markets continues to evolve, additional market attributes such as innovations and competition may contribute towards the achievement of sustainable and appropriate pricing. In contrast with a singular focus on price or innovation, this holistic approach better aligns with Gavi’s strategic goals to 1) introduce and scale up vaccines and to 2) improve sustainability of immunisation programmes.</p> <p>HMF gives a holistic view of markets, where market healthy level is determined by:</p> <ul style="list-style-type: none"> • Level of supply to meet demand • Level of supply security to mitigate supply risks • Level of long-term competition • Overall programmatic cost and effectiveness due to product characteristics and price per dose • Development of vaccines with improved characteristics that address programmatic needs • Degree to which demand materializes and is predictable over time • Degree to which countries’ product choices are evidence-based

Indicator name	Healthy Market Dynamics	
Method of measurement	Semi-quantitative assessment of individual market health, conducted by core Alliance partners (i.e., UNICEF, BMGF, WHO)	
	Based on assessments of individual Healthy Markets Framework attributes and a wholistic overview of each market's programmatic context, markets will be assessed based on the following categories:	
	Unacceptable and requires further intervention	Majority of high and medium impact attributes are unmet No improvement is expected without further Alliance intervention
	Unacceptable with conditions for improvement	Majority of high and medium impact attributes are unmet Improvements possible and expected with lead time to materialise
	Acceptable with risks	Majority of high and medium impact attributes are fully met or partially met Interventions are required to mitigate risks
Acceptable and sustainable	Majority of high and medium impact attributes are fully met or partially met Monitoring required to ensure risks to not increase	
Analysis and interpretation	<p>Impact of analysis:</p> <ul style="list-style-type: none"> • Identification of low HMD drivers is needed to identify appropriate interventions to address challenges and mitigate risks • HMF analysis provides context for changes in supply availability and price trends, and thus guidance on whether the changes are acceptable or require interventions to address • Analysis takes into consideration a multitude of factors required for access to near-term vaccine supplies as well as conditions for long-term sustainable HMD to facilitate long-term country programmes 	
Strengths and limitations	<p>Strengths:</p> <ul style="list-style-type: none"> • Gives a more holistic view of markets, with considerations of long-term market evolution and risk mitigation • Has enough flexibility to accommodate the specific needs of different market contexts <p>Limitations:</p> <ul style="list-style-type: none"> • Flexibility comes with added subjectivity that may pose challenges in reaching assessment alignment 	
Data source	<ul style="list-style-type: none"> • Vaccine procurement data: UNICEF SD MoU reports • Market intelligence data: Gavi MS roadshows, Alliance partner industry engagements 	

Indicator name	Incentivise Innovations
Strategic objective	SG4 – Incentivise innovation for the development of suitable vaccines
Level of reporting	1 – Goal
Indicator definition	Number of innovative products within the pipeline of commercial-scale manufacturers
Numerator	Number of innovative products within the pipeline of commercial-scale manufacturers
Denominator	N/A
Data type	Number count
Level of disaggregation	By individual products
Frequency of reporting	4 – Annual
Responsible team	Market Shaping
Rationale for use	<p>One of the key objectives of Gavi’s market shaping work is to ensure the availability of quality and suitable vaccines products for countries. As the health of markets improve over time with increased supply security, an increasing focus will be placed on product innovations that can better address countries’ programmatic challenges. Gavi’s supply and procurement roadmaps for individual vaccine markets outline key challenges that country face and potential innovations that may have a critical impact in improving coverage and equity. Tools for incentivizing the development of such innovations are considered and used in alignment with roadmap targets.</p> <p>Additionally, during the 2016-2020 period, the Vaccine Innovations Prioritisation Strategy (VIPS) was launched to prioritise innovations in vaccine delivery attributes to provide greater clarity to manufacturers and immunisation partners to make investment decisions. Through an Alliance-wide collaboration effort, VIPS analysed 24 vaccine product innovations through thorough evaluation process centered on country needs. The evaluations will result in the prioritisation of 3-4 vaccine product innovations paired with specific antigens. Depending on Gavi 5.0 mandate and resources, the Alliance will consider how to support the prioritised innovations beyond prioritisation and signaling.</p>

Indicator name	Incentivise Innovations
Method of measurement	<p>Indicator progresses when any VIPS-prioritised innovations partner with a commercial-scale manufacturer that is committing to take a product to market. The indicator will count “products” as individual assets, i.e., two independent pipeline vaccine candidates for the same antigen or innovation will be counted as a progress of two.</p>
Analysis and interpretation	<p>VIPS-prioritised innovations are expected to be in early phased of product development during the 5.0 period and products may not enter the market until after 2025. In order to assess the impact of Gavi’s incentivisation tools, commercial-scale manufacturers committing to taking a product to market may be the most effective proxy for market attractiveness.</p> <p>By counting individual vaccine candidate instead of general categories of innovations or products, the indicator will be able to track an estimated magnitude of impact of Gavi’s incentivization for innovations.</p>
Strengths and limitations	<p>Strengths:</p> <ul style="list-style-type: none"> • Allows assessment of whether sufficient incentives are in place for manufacturers to invest in product development <p>Limitations:</p> <ul style="list-style-type: none"> • Does not track further progress once a pipeline programme is initiated by a commercial-scale manufacturer • Difficult to quantify causation that may be attributed to Gavi interventions
Data source	<ul style="list-style-type: none"> • Market intelligence data: Gavi MS roadshows, Alliance partner industry engagements • VIPS: TBD, pending Board decision on VIPS phase 2

Indicator name	Scale-Up Innovations
Strategic objective	SG4 – Scale up innovative immunisation-related products
Level of reporting	1 – Goal
Indicator definition	Number of vaccines and immunisation-related products with improved characteristics procured by Gavi as compared to the baseline year
Numerator	Number of vaccine and immunisation-related products with improved characteristics procured between 2021 and 2025
Denominator	N/A
Data type	Number
Level of disaggregation	Vaccines, CCE, other immunisation-related products
Frequency of reporting	4 – Annual
Responsible team	Market Shaping
Rationale for use	One of the Gavi Alliance's key priorities for the 2021-2025 period is to scale-up innovations. As manufacturers successfully bring innovative products to market, tracking whether these products are procured through UNICEF gives an indication of whether countries are adopting products with improved characteristics for use.

Annex E: Preliminary resourcing analysis

Gavi MSS 5.0 Draft Resource Requirement

Workstream	Effort	Secretariat MS Resource Gap	Other Alliance Resource Gap
Partnership Optimisation		 0.2 FTEs	
Future Supplier Base		 1.0 FTEs	
Healthy Demand		 0.5 FTEs	
Transformational Innovation		 0.8 FTEs	
Support Regulatory Efficiencies		 0 FTEs	
Grand Total		 2.5 FTEs	

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⁶ IFPMA = International Federation of Pharmaceutical Manufacturers and Associations

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⁸ CEPI = The Coalition for Epidemic Preparedness Innovations

Annex G: Acronyms and abbreviations

BMGF	Bill and Melinda Gates Foundation
BMGF-VDCP	BMGF Vaccines and Disease Control Programs
CCE	Cold chain equipment
CEPI	Coalition for Epidemic Preparedness Innovations
COVID	Coronavirus disease
CTC	Controlled Temperature Chain
DCVMN	Developing Countries Vaccine Manufacturers Network
EUL	WHO's Emergency Use Listing
FFVA	Full Vaccine Value Assessment
Gavi	Gavi, the Vaccine Alliance
Gavi 4.0	Gavi strategic period covering 2016-2020
Gavi 5.0	Gavi strategic period covering 2021-2025
Gavi74	74 Gavi-supported countries refers to the 74 countries defined as Gavi-eligible in year 2000, less China, plus countries that were created (Timor-Leste, South Sudan) or became eligible during 2016-20 (Syria)
Gavi-MS	Gavi Secretariat Market Shaping team
HIC	High Income Country (World Bank classification, as of 1 July 2018, GNI/capita \geq USD 12,055)
HMF	Healthy market framework, developed by Gavi partners
HPV	Human papillomavirus
IA2030	Immunization Agenda 2030: A Global Strategy To Leave No One Behind, led by the World Health Organization
IFPMA	International Federation of Pharmaceutical Manufacturers and Associations
ILR	Ice-lined refrigerators and freezers
IPV	Inactivated polio vaccine
KPI	Key performance indicators
LIC	Low Income Country (World Bank classification, as of 1 July 2018, GNI/capita \leq USD 995)
LMIC	Lower Middle-Income Country (World Bank classification, as of 1 July 2018, GNI/capita USD 996 – 3,895)
LTA	Long Term Agreement
M&E	Monitoring and evaluation
MFN	Most Favorable Nation
MS	Market shaping
MSS 5.0	Gavi's Market Shaping Strategy for the 2021-25 strategic period
NRA	National Regulatory Authority
PAHO	The Pan American Health Organization
Partners	Partners of Gavi, the Vaccine Alliance
PATH	Program for Appropriate Technology in Health, Seattle, USA
PPC	Gavi's Programme and Policy Committee
PPM	Product Portfolio Management
PPoP	Preferred Policy Profiles, led by WHO
PQ	Prequalification of vaccines by the World Health Organization for purchase by United Nations Agencies
PRG	UNICEF Procurement Reference Group
RFP	Request for Proposals
Roadmaps	Gavi vaccine-specific market shaping strategies
SAGE	Strategic Advisory Group of Experts on Immunization
SDD	Solar direct drive refrigerators and freezers

SDG	United Nations Sustainable Development Goals
SGs	Gavi Strategic Goals
Square group	Partnership of Gavi market shaping partners from: Gavi Secretariat, UNICEF-SD, WHO-IVB, & BMGF-VDCP
SUPRS 4.0	Supply and Procurement Strategy for the 2016-2020 strategic period
TCV	Typhoid conjugated vaccine
ToC	Theory of change
ToR	Terms of reference
UMIC	Upper Middle-Income Country (World Bank classification, 2016 fiscal year, GNI/capita USD 4,126 - 12,735)
UNICEF-SD	UNICEF Supply Division
UNICEF-SD	UNICEF Supply Division
VIPS	Alliance's Vaccine Innovation Prioritisation Strategy
VIS	Gavi's Vaccine Investment Strategy
VMDC	Vaccine Market Dynamic Convening meeting
WAP	Weighted Average Price
WHO	World Health Organization
WHO-IVB	WHO Department of Immunization, Vaccines and Biologicals
YF	Yellow fever