

Risk Modelling
Steering Group

Strategy: 2023 update

Public-private collaboration in
risk analytics to close the
protection gap



Risk Modelling Steering Group – Strategy paper update (March 2023)

References:

- A. **IDF – V-20 Agreement, signed at CoP26 (December 2021)**
- B. **Development Impact of Risk Analytics report (October 2020)**
- C. **IDF-Oasis Phase 3 Project Initiation Document v1.5 (March 2023)**
- D. **RMSG Standards and Best Practices document v2.0 (December 2021)**

1. The RMSG in 2023

- a. The Risk Modelling Steering Group (RMSG) is an expert working group of the Insurance Development Forum¹ (IDF.) It is international in nature and its 90+ participants are drawn from the insurance industry, vendor modelling organisations, IGOs, NGOs and the scientific research community. It is led by private sector and UN co-chairs and sub-groups are formed by willing volunteers for execution of specific workstreams.
- b. The RMSG exists to provide a portal to private sector risk analytics capability in support of the UN Sustainable Development Goals. While this capability originated in the quantification of risk arising from single geo-physical and hydrometeorological hazards, it can (and should) also be used to develop strategies in the context of multiple hazards and a changing climate.
- c. 2022 was absolutely a landmark year for the IDF's risk modelling programme. Following the IDF's agreement with the V20 Group of finance ministries of 58 climate-vulnerable countries, the German government formally announced its support for the [Global Risk Modelling Alliance](#) (GRMA). The GRMA programme is designed to create local capability using insurance risk methodologies in countries where the need is greatest. Shortly afterwards the German government intimated that it would provide initial funding support of €10m to get the programme started in 2022. As momentum for the Global Shield initiative increased, so too did the potential role of the GRMA within it, and a further €11m was committed.
- d. Meanwhile, during 2022 the IDF Steering Committee and other industry members strengthened their support for the vision and strategic aims of the RMSG. Seven companies² have committed funds to RMSG's programme through MoUs, and many more have contributed in-kind support. Much of this enabled great strides forward in the development of the Oasis open-source risk modelling platform, the Open Data Standards suite it curates, and transformation tools to create interoperability between leading data formats. Additionally it saw the development of the unique Oasis Risk Explorer open-source tool, which provides entry level access to catastrophe risk modelling principles. This tool will accelerate understanding and use of risk finance metrics, particularly for parametric applications.

¹The IDF was launched at CoP Paris in 2015 by Helen Clark, Administrator of the UN Development Programme, and senior insurance industry figures. Addressing the global protection gap has been central to its thinking, and the IDF has committed to the objectives of the InsuResilience Global Partnership.

² AIG Re, Aon, AXA Group, Axis, Convex, RenaissanceRe and SCOR

2. Vision and strategic priorities

- a. The RMSG is dedicated to improving global understanding and quantification of natural hazards disaster risk, through sharing of the re/insurance sector’s experience, tools and methodologies. Those responsible for risk and resilience decision-making in vulnerable countries should be able to access the models and datasets best suited to their risk questions, use them on their preferred platform, develop them further and have trust in the results. The benefits will include:
 - i. Improved risk ownership, accountability and reporting. Many international agreements require countries to analyse, plan and report their risk, but in many cases the domestic capability is unable to match the need.
 - ii. Reduced uncertainty in risk strategy formulation and operational decision-making.
 - iii. Common tools and a shared language of risk connecting the private sector, governments, development agencies and academia. This can only be beneficial for market-building and economic development.
 - iv. Reduction of duplication and inefficiency in the risk modelling supply chain for development programmes, which is largely funded by taxpayers.

- b. The outcome of RMSG’s work with its members and partners should be the modelling ecosystem shown at **Annex A**. To achieve this, RMSG’s strategic priorities and workstreams are grouped under the following two themes:

- c. **Theme 1 Vision: Open modelling technology and standards:** The current supply of risk metrics in international development is characterised by a wide variety of formats and systems, with no established standards for the easy transfer of data between platforms, models and systems. Model assumptions are opaque and many models can only be used on the proprietary platforms for which they were built, leading to well-known issues of duplication, cost and inefficiency. The net result is that there is no lasting transfer of risk understanding to decision-makers, particularly in parts of the world with the most significant vulnerabilities.

RMSG’s vision is that sub/sovereigns and their agencies wishing to develop their own finance-aware risk analytics functions can access the open-source technology and standards they need to develop their own view of risk³. Availability of a foundational open-source platform and widely accepted data standards will remove the barriers of cost and complexity, and increase choice and transparency.

- d. **Theme 2 Vision: Delivery of content and sub/sovereign capability:** The enabling technology in **Theme 1** only adds value if relevant models and data are also available, along with the knowledge to use them. The **Theme 2** vision is that risk owners in vulnerable countries gain sufficient capacity and knowledge to develop their own risk functions, construct a layered risk strategy, and develop the risk information to execute it operationally. A key point is the build out and integration of local data and research in the models, which in many cases is likely to improve model results and will certainly approve model acceptability⁴.

³ For a full justification of the logic behind this vision see Reference A.

⁴ Amongst other sources, this point has been emphatically reinforced by FSD Africa, and by various opening engagements between the GRMA and prospective partner countries.

This will clearly require the development of local capability in certain contexts. RMSG has launched the GRMA service to support vulnerable countries in development of this capability.

3. Theme 1: Open modelling technology and standards

a. Strategy:

- i. RMSG will catalyse the optimisation and adoption of open-source risk modelling platforms⁵ and related modelling standards across sub/sovereign governments and the development community that supports them.
- ii. During 2020 RMSG formally selected the Oasis Loss Modelling Framework (from here on referred to as Oasis) for the purpose. The benefits of this selection are summarised in Box 1 below.

Box 1: Rationale for the selection of Oasis:

1. A stable open-source software platform providing a simulation engine designed for probabilistic as well as deterministic modelling and able to incorporate catastrophe models from around the world.
2. Re/insurance grade modelling capability. In addition to the core software Oasis includes a standards-based open-source financial module covering the financial contract terms that are so critical for operational transactions.
3. A non-competitive, non-profit position with wide market support. For example, Oasis’ open-source software is at the core of ‘Software as a Service’ platform providers such as Nasdaq and QOMPLX, as well as the model service offering from Xceedance. Many vendor modellers, brokers and non-profit partners already format models to Oasis standards and the number is growing.
4. Oasis curates a suite of widely accepted standards, known as Open Data Standards (ODS), including Open Exposure Data and Open Results Data (OED and ORD) standards, as well as standards in representation of hazard, vulnerability and financial metrics.
5. A set of functional tools including model development kits and APIs, enabling the conversion of models to a standard format.
6. A range of scalable deployment options from ‘out of the box’ use by small teams up to customisable enterprise use.

⁵ For clarity, ‘Open-source platform’ does not mean that all models and data on the platform are necessarily open. In practice there is a mix. Public good licences will be preferable where programmes are for the benefit of sub/sovereigns working towards UN SDGs, but the value of Intellectual Property may also be protected where commercial transactions can support the sustainability of programmes beyond a publicly funded period.

- iii. RMSG’s strategy requires optimisation of the technology and standards for use in the development environment. This gives rise to the following workstreams:

b. Workstream 1.1: Oasis platform development for public sector and humanitarian use

- i. **Context:** In Phase 1 of the IDF-Oasis development programme (January-June 2021) the IDF helped to fund developments in usability and performance of the Oasis Loss Modelling Framework. This was done in collaboration with the ‘G10’ group of companies and, although industry-funded, the outcome was of potential benefit to all sectors.

Phase 2 of the programme, executed in 2022, delivered:

The Oasis Risk Explorer tool. This entry-level tool uses the Hazard x Exposure x Vulnerability construct with an actuarial engine to ensure the ability to estimate loss and model potential parametric payouts.

- 1. Oasis fragility curves: A feasibility study for the improvement of vulnerability functions and use of fragility curves in the Oasis modelling system.
- 2. The study proved the value of .

- ii. **Phase 3 of the programme** is currently at the proposal stage and includes:

- 1. **Oasis Software development for dynamic modelling:**
Newly built Oasis software would enable a number of existing commercial flood model providers to expand their geographical coverage to include all countries without the need to build and deploy individual models for each country. This would allow existing model users access to a wide variety of new countries without the need for additional deployments. The new countries would include those not traditionally insured, including developing countries, thereby enabling insurance companies to better understand the risk and write business in these new territories and help to close the insurance gap

This new approach to accessing model data will also allow the source model data in catastrophe models to be more aligned with traditional hazard data used outside of catastrophe models. This should make the building of catastrophe models in Oasis more straightforward for academics and commercial model providers, since the accepted data formats will include traditional flood maps, etc.

- iii. **Oasis Risk Explorer – further development**

The next stage of development of Oasis Risk Explorer includes:

1. Consolidation and testing of the tool by users, for example in the GRMA programme
2. Improvements to ensure code stability
3. Integration of 1-2 further hazards. Currently the tool demonstrates loss and payouts for Tropical Cyclone. The project proposes to add Earthquake (using GEM data) and one other hazard, based on user input. This is likely to be one of Flood, Drought or Extreme Heat.

iv. **Oasis event forecasting capability**

Oasis LMF offers a sophisticated platform for the modelling of baseline risk, but does not currently model the impact of real time events as they unfold. This project looks at the integration of partners' forecasting capabilities, which would open up new cases for Oasis particularly in the humanitarian sector and disaster risk management authorities.

The initial assumption is that Flood would be the most appropriate hazard to start with, and already some partners have volunteered pro bono resource to make this happen. At the time of writing RMSG is securing the support of lead actors in the humanitarian sector to identify use cases and scope requirements.

c. **Workstream 1.2: Open data standards**

i. **Context:** As described in detail in Reference B, adoption of agreed open risk data standards for data and model interoperability will increase knowledge exchange between private, public, humanitarian and academic participants, and increase choice by making models deployable on users' preferred platforms. RMSG supports the view of the Open Modelling Collaboration/G10 group, and also the US-based Climate Resiliency Council under the banner of The Institutes, that the Open Exposure Data (OED) and Open Results Data (ORD) standards should be adopted as the default for use not only across industry but across all sectors.

ii. **Current progress and objectives for 2023:**

Having integrated human exposure into OED v2 in collaboration with Oasis, we will turn our attention to developing capabilities for handling public infrastructure exposure data. This work will benefit from input of RMSG members' knowledge on risk analytics for public infrastructure, so a working group has been established. Importantly, we will seek to maintain interoperability of infrastructure exposure data with the public sector (Risk Data Standards, via GEM and GFDRR), and the GRII. This added capability of OED will continue to enhance the ability of models in Oasis to respond to public sector risk analytics requirements.

In 2021 ITWG (see below) established a beta version of an exposure data transformation pairing between WB's Risk Data Library (RDL) and OED, establishing a link between OED and a development-sector schema in which an increasing amount of World Bank risk data will be held in their public

Data Catalogue (<https://datacatalog.worldbank.org/search/collections/Risk-Data-Library>). GFDRR Risk Data Library project has received funding from SwissRe Foundation to improve risk data standards and apply them in operational projects, via a cohort of RDL Fellows in six countries. Where possible RMSG and GFDRR will look to collaborate on risk data standards and analytics where GRMA is working in the same countries as GFDRR RDL Fellows.

Note that this workstream also includes participation in the Risk Data Library Standard Steering Group, which brings together stakeholders from World Bank, IDF, Swiss Re Foundation and Oasis.

d. Workstream 1.3: Interoperability

- i. **Context:** RMSG’s Interoperability Technical Working Group (ITWG) addresses the technical challenge of interchange of existing models and data sets between platforms, reducing the cumbersome manual intervention currently required to compare or share analytics.

During Phases 1 and 2 it developed the Open Data Transformation Framework (ODTF), the code for which is available on Github. This data transformation tool expands possible interactions between modelling systems, initially between the Verisk CEDE and Oasis-curated OED formats. The benefit is not only the saving of considerable (expensive) time spent in repetitive data format transfer processes, but also the greater likelihood of model comparison and validation.

Current progress and objectives for 2023:

Development of the next version of the Open Data Transformation Framework was completed in January 2022, improving ease of use and documentation. This supports a more rigorous and coordinated testing phase with a larger community of catastrophe analysts, and promotion of its capabilities to analysts in the US market, which we have not attempted previously. This is being driven by the ODTF Steering Committee (including representatives of RenaissanceRe, Chubb, SCOR, Aon, Guy Carpenter, AIR-Worldwide, and Oasis LMF) and the US-based **Climate Resiliency Council**.

The IDF and CRC coordinated a series of workshops in 2022 to demonstrate the ODTF to US market analysts and engage them in testing, use, and development of the framework. This works towards the objective of establishing a larger community of users and developers around this framework, to boost its capabilities and operational adoption.

In 2023 the joint ITWG and CRC will:

- Achieve vendor modeller cooperation through the ODTF Mapping Certification Process

- Harden ODTF capabilities, through API integration, bug fixes and steps to achieve scalability

Promote industry adoption through an awareness campaign (including both ODTF and OED), highlighting the advantages of interoperability and shared standards across broader industry and public sector markets. The campaign will stress the advantage of this approach for climate risk analytics, developing economies and emerging risks.

4. Theme 2: Delivery of sub/sovereign capability and model/data content

a. Strategy:

- i. **Theme 2** is about making knowledge and resources available to sub/sovereigns and their partner agencies to assist finance-aware strategic risk planning, operational decision-making and market development. This implies both capacity building and the filling of critical model/data gaps. The rationale and evidence supporting this case, including a Theory of Change, is presented in detail in the [Development Impact of Risk Analytics](#) report (**Reference B**).
- ii. The main vehicle to achieve this goal is the GRMA, launched at the IDF Summit in June 2022. Details are shown at Workstream 2.1 below.
- iii. RMSG is not operating in isolation and will work with other initiatives and opportunities that are consistent with the aims of **Theme 2**. These include:
 1. Support to **Tripartite Agreement** operational projects.
 2. Support to the UK's Sustainable Markets Initiative (SMI)
 3. Support to **UNDP's** rollout of risk assessment as a key component of Integrated National Financing Frameworks (INFFs).
 4. Work with the UK's recently announced **Centre for Greening Finance and Investment**, particularly on the **Global Resilience Index Initiative** (see below).
 5. Ad hoc support to programmes of RMSG members.

b. Workstream 2.1: The Global Risk Modelling Alliance

- i. **Context:** The logic for the GRMA entity is laid out in detail in **Reference B**, supported by the agreement with the V-20 Group of Ministers of Finance (**Reference A**). The GRMA aligns with the objectives of [InsuResilience Vision 2025](#), to provide protection for 500m vulnerable people by 2025. During 2022 it was confirmed as an integral component of the G7 Global Shield initiative, at two levels:
 1. To provide risk assessment during the first 'in-country' dialogue phase of Global Shield programmes, initially in GS Pathfinder countries.
 2. To assist with the Global Shield's second, capacity building phase.
- ii. At CoP27 an operational partnership was formally confirmed between the GRMA and Pakistan. The first workshop was held in December 2022, hosted

by Pakistan’s Ministry of Climate Change. BMZ’s objectives for the GRMA envisage an initial ten countries, of which three should be operational by CoP28. The current status of dialogue with interested countries is shown in **Table 1** below:







 Pakistan	Formal GRMA partnership approved and announced November 2022 First workshop held in Islamabad, December 2022
 Niger	Expression of interest letter received October 2022 Consultation meetings held in Niamey, February 2023
 Madagascar	Expression of interest letter received February 2022 First workshop held in Antananarivo, February 2022
 Ghana	Public statement of intent to partner with the GRMA both at IDF Summit (June) and CoP27 (November) Consultation meeting held in Accra, October 2022.
 Costa Rica	Informal support secured in SUGESE (office of the insurance superintendent). Expression of interest to be secured through MoF and MoFA.
 Nepal	NDMA expressed interest at CoP27. Possible partnership approach to capability development with World Bank CDRFI programme.
Others	Other countries that have informally expressed interest include The Gambia, The Maldives, Fiji, Bangladesh.

Table 1: Current status of GRMA partnership development

- iii. While primarily driven by Global Shield framework, the GRMA governance structure is deliberately designed to include wider donor support and workstreams. One option under consideration is a workstream on assessing and pricing risk in multi-lateral development bank investment projects. Another is potentially to open a workstream supporting the humanitarian sector. Regarding the existing programme of support to sovereigns, the eventual ambition could be to have programmes completed or under way in 20 countries by 2026.
- iv. The rationale and principal components of the GRMA are summarised in the graphics below:

What's the problem?

Risk analysis is critical to climate and disaster risk strategy:

- Investment in resilient infrastructure
- Contingent risk finance
- Market development

But access to risk analytics is unequal:

- Most model platforms and metrics are expensive
- Proprietary formats prevent sharing
- Uncertainties are hidden
- Local research is not sufficiently used
- Public and private sector views are separated



A solution is required to democratise risk understanding

The GRMA's approach to democratize risk understanding

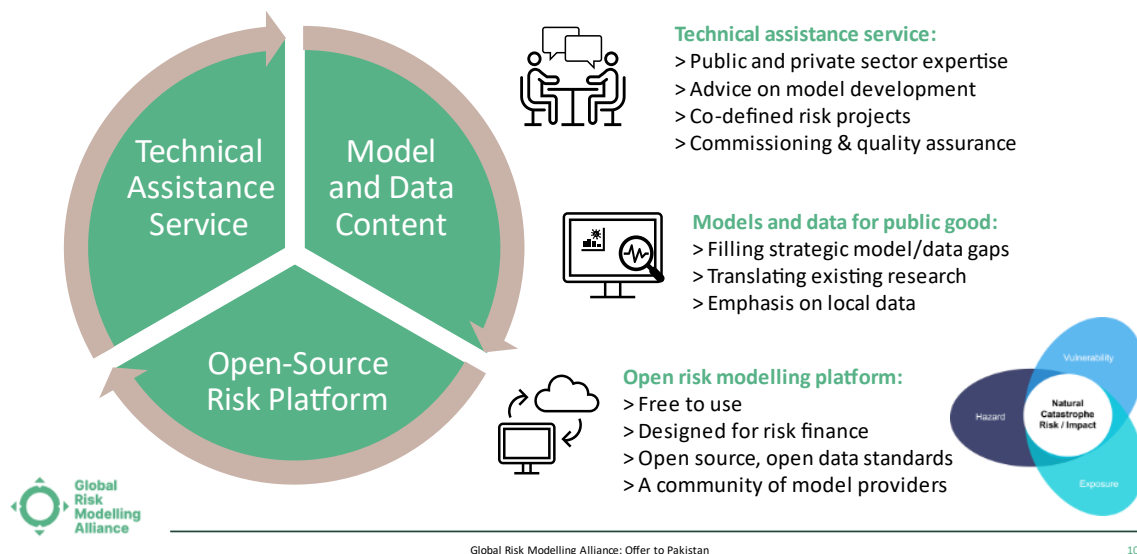


Figure 1: Introduction to the Global Risk Modelling Alliance

v. As shown in **Figure 1**, the GRMA programme consists of three elements. The current status of each element is:

1. **Open risk modelling platform:** Investment in optimising open modelling infrastructure for public sector and humanitarian use is covered by the IDF's investment in Oasis software, the open data standards it curates, and in tools to enable interoperability between data formats. These investments, funded by IDF member

companies, were described in the previous section under ‘Theme 1: Open Modelling Platform and Standards’.

Filling Model and Data Gaps: The GRMA practitioner team (see below) will assist countries in identifying critical model and data needs. Once defined, the work will then be offered to model/data consortia through InsuResilience Solutions Fund processes. The majority of the German government’s funding will be reserved for this purpose, and wherever possible local data and research will be included as part of the solution.

2. **GRMA practitioner team:** The hallmark of this team is the experience of its practitioners in using insurance modelling approaches for strategic risk insight and unlocking disaster risk finance. Experts will be drawn from the catastrophe modelling community across public and private sectors and employed on a consultancy basis.

Services provided by the GRMA include:

- a. Assistance to countries in developing a strategic risk audit.
- b. Guided by the audit, assistance to countries in operational analysis of their priority risks to improve access to operational finance transactions.
- c. Countries will build capability through co-development of these projects, on a ‘learn by doing’ basis. The GRMA’s supporting services will include:
 - i. Model gap and user needs analysis.
 - ii. Facilitating (through the ISF) the commissioning and quality assurance of new models/data where the market is not meeting the need, ensuring use of the Oasis platform and open data standards.
 - iii. Translation of existing models to Oasis format, using local data and research wherever possible.
 - iv. Quality assurance.
 - v. Assessment of sub/sovereign risk analytics capabilities in the context of the risks they face - and consultancy on a development pathway.
- d. Advocacy and education to encourage widespread adoption of open risk modelling technology, standards and practices.

c. Workstream 2.2: Support to Tripartite Agreement projects

- i. **Context:** Tripartite Agreement consortia aim to have operational projects in 20 countries by 2025. The assumption is that companies will wish to use their internal analytics capability for risk modelling or will outsource to third party model vendors and developers. RMSG has no intention of offering any duplicating or substitute services.

However, it is important that the standards and best practices advocated by

the IDF are upheld in country projects, and that RMSG offers complementary services where they would be helpful.

- ii. **Current progress and objectives for 2023:** RMSG will support project consortia in moving from planning to operations in two areas:
 1. **Standards:** A ‘Standards and Best Practices’ document (**Reference C**) has been agreed between the leadership of the working groups and has been distributed to consortia.
 2. **Services:** A proposal for RMSG services to Tripartite projects has been shared with consortia. It centres on sub/sovereign capacity development services, which may be important to partner countries but may not be a key objective of companies’ catastrophe modelling teams. At the time of writing no consortia have requested these services, but we are still at an early stage in the programme.

d. Workstream 2.3: Global Exposure Database (GXD)

One of the data gaps most frequently cited, particularly in lower-income countries, is lack of detailed exposure data, covering population as well as built environment.

Some attempts have already been made to address the problem, largely from academic and public sector quarters, but are not generally designed for the purpose of modelling risk at an operational level to unlock finance. The industry has an opportunity to make a huge contribution here – not by inventing something new but by bringing together existing schema and resources and upgrading them to include industry metrics and insured values.

Objective: The objective of this project is to define and launch an open portal making insurance-grade exposure data available for use by all sectors. Top layers will be free for public good, while future versions will create a marketplace for more granular data in which providers can be rewarded for their investment.

Use cases: There are multiple use cases for this project across public and private sectors. As a private-public entity, the IDF is uniquely positioned to catalyse partners around creation of this service, although it clearly should not be the custodian of the portal or the data. At top level use cases would include:

Climate and disaster risk finance programmes in lower income countries:

Government and municipal authorities in data-scarce countries would benefit significantly from an openly accessible, free-to-use resource which collates exposure data from multiple partners and, critically, includes insured values as well as economic replacement cost. Other available databases do not reflect insurance values (GAR17, GEM, METEOR, OSM) or else accessibility is limited through licensing constraints (PERILS, GAR17, ImageCat, higher-resolution GEM). As an example, the GXD would be a key resource in the GRMA’s programme with country partners and would remain as a lasting resource long after the GRMA programme has completed its objectives.

Humanitarian applications: During the scoping workshop phase of this programme, interest was expressed by humanitarian actors in use of the GXD. This is increasingly relevant as more re/insurers and brokers are committing to humanitarian financing

programmes. Examples include the IDF’s support to Start Network programmes in eight operational countries, and also Aon’s increasing support to the IFRC. The GXD project team would include a humanitarian champion to represent this use case.

Insurance industry: RMSG’s technical projects are typically designed to accelerate the spread of risk understanding in climate-vulnerable, lower income countries. However this project offers the opportunity to reflect some benefit back to industry as well. There is an efficiency argument here – each company currently duplicates effort by building its own exposure database, and yet there is a huge amount of commonality. At the same time, industry is moving towards common standards, using the Open Exposure Data (OED) format curated by Oasis. There is little competitive advantage for a company in going it alone, and many companies are interested in building a shared resource.

An advantage of this use case is that it increases the likelihood of finding a host for the GXD that is familiar with insurance modelling requirements and is accepted by industry. PERILS would be one example and The Institutes could be another. A task of this project would be to find candidates homes for long-term hosting of the GXD.

Research and data service programmes: One obvious use case is future iterations of the Global Resilience Index Initiative; this globally consistent database would be entirely compatible both in spirit and format. Insured value might also offer new GRII metrics in future service updates. As mentioned above, the GXD service could also create a commercial marketplace for higher-resolution data, much in the same way that Oasis now offers different levels of access through different licensing models.

e. **Workstream 2.4: Global Resilience Index Initiative**

- i. The IDF is one of a growing group of founding organisations behind the Global Resilience Index Initiative (GRII), alongside the Coalition for Disaster Resilient Infrastructure (CDRI) and the UK Centre for Greening Finance and Investment (CGFI).
- ii. RMSG’s strategy includes support to the GRII, as a key tool for accelerating the spread of risk understanding using insurance methodologies throughout public and private financial systems. It is an ambitious modelling programme delivering metrics to support physical climate risk scenarios, stress testing and analysis for exposed communities, markets and assets worldwide. Launched as a public good, the GRII will provide a reference index for the comparison and valuation of aggregated risk on a globally consistent level. In the way that progress in climate mitigation is measured in tonnes of CO₂, the GRII could deliver the *lingua franca* for measuring progress in adaptation and resilience.
- iii. A graphic summarising the GRII’s approach is shown at **Annex B**. The relevance to RMSG’s programme is clear; the GRII will be a useful resource in accelerating the spread of physical climate risk analysis, particularly at a strategic, portfolio level. It is a very helpful first step in a journey of risk

understanding - and there are links to the work of the GRMA in strategic risk auditing/profiling at sovereign level.

- iv. The GRII was announced in the margins of CoP26, under the patronage of Mark Carney (UN Special Envoy for Climate and Finance), Mami Mizutori (Special Representative of the UN Secretary General for Disaster Risk Reduction) and Eric Anderson (President, Aon). A demonstrator using the GSRAT risk viewer was launched at CoP27 in November 2022.
- v. Building on the concepts advanced by the UN’s Global Assessment Report 2017 (GAR17) the GRII will enable users to assess the benefit of investment in resilience in the face of multiple hazards. Importantly it will cover impacts beyond the built environment - the plan includes metrics for infrastructure damage, social impacts, economic loss and potentially natural capital. The vision is that its metrics will help communities and markets across the planet turn to green and resilient finance solutions to build a more resilient world.

f. **Workstream 2.4: Support to further key partnerships**

- i. A number of IDF partner/member organisations are interested in the potential of RMSG’s programme to create country capability in finance-aware risk understanding, at both strategic and operational levels. Key current conversations include:
- ii. **InsuResilience Global Partnership (IGP):** The IDF works in constant and close partnership with the IGP, mainly through the InsuResilience Secretariat. RMSG engages with the IGP’s data programme and will support multiple IGP events in 2023, not least the Annual Forum. We will track engage fully in the transition of InsuResilience mechanisms toward the Global Shield structure, not least because the GRMA is nominated a key resource in Pillars 1 & 2 of Global Shield country engagements.
- iii. **UN Office for Disaster Risk Reduction (UNDRR):**
In 2020 UNDRR has been a much-appreciated advocate of RMSG’s programme, through contribution to the DIRA paper and the subsequent call to action, and of course through co-chairing the RMSG. The working group will continue to provide expertise to UNDRR programmes such as development of the Global Risk Assessment Framework (GRAF) and stands ready to assist in its country pilot programmes if required.
- iv. **UNDP Insurance and Risk Financing team:** UNDP is a key partner and facilitator in Tripartite Agreement projects, but also has wider ambitions for capacity building in Tripartite and other countries. The GRMA has agreed with the UNDP IRFF team an informal set of engagement guidelines for our work in countries. These are shown in Table 2 below:

UNDP – GRMA complementary offers

(for countries requesting UNDP and GRMA support simultaneously)	
UNDP	GRMA
UNDP diagnostic informs country needs. May lead to suggesting the GRMA as a resource in partnership with the UNDP offer.	GRMA pre-application phase ascertains country requirements and appetite for GRMA to complement UNDP activity, informed by UNDP diagnostic. GRMA offers workshops with country officials. Independent, agnostic approach.
UNDP may invite GRMA into its workshop activity (UNDP bullet 1)	GRMA may invite UNDP into risk understanding workshops.
GRMA activity reflected as a complementary activity , UNDP supports with political/relationship building	GRMA agreement with the country – co-defining objectives and outcomes of the programme. GRMA work in the spaces shown by IRFF’s 3 bullets on risk modelling (where country requests)
Develop country risk profiles (UNDP bullet 2)	GRMA executes strategic risk assessment according to the requirements of the country; UNDP accesses the GRMA reports to support country risk profile.
Develop operational models (UNDP bullet 3)	GRMA can support maximum 1-2 operational risk finance projects (unless additional funding found)
Longer term broad capability in risk financing (UNDP bullet 4)	Capability development in risk understanding and model/data procurement are a core part of the GRMA’s programme

v.

vi. **World Bank Group**

1. Since 2021 a series of meetings at senior IDF levels led to an intention to create stronger links between IDF and World Bank Group (WBG) programmes. For RMSG this meant looking for opportunities to collaborate more closely with practitioners in the Global Facility for Disaster Reduction and Recovery (GFDRR) and the Climate and Disaster Risk Finance and Insurance (CDRFI) groups.
2. Collaboration has progressed significantly, and currently includes:
 - a. Input from WB specialists to IDF-Oasis Phase 3 technical developments.
 - b. Continued convergence of the open exposure data formats used in the (private sector) Open Data Suite and (public sector) Risk Data Library. This work is described in RMSG Theme 1 above.
 - c. Joint authorship, publication and promotion of a WB/IDF study into risk modelling for finance in a data-scarce

regions. The study will use Flood in Nepal as a case study but its findings should have very wide application to Disaster Risk Financing across south Asia and beyond.

vii. **Humanitarian partnerships:**

1. Start Ready financing facility: Development of the Start Ready capital model by RMSG members is now complete, members are now engaged in placement of tail risks identified in the model for target country/perils.
2. Support progress of the IDF's developing engagements with UN OCHA.
3. Participation in Risk-informed Early Action Partnership (REAP) Board, working groups and key events.

viii. **Global delivery partnerships:** RMSG is a network and its delivery programmes could not possibly be achieved without partnership. The Global Earthquake Model (GEM) is an excellent potential partner in delivery, and brings years of experience of working at country level. GEM Foundation is ready to partner with the GRMA to make its earthquake risk models, tools and exposure and vulnerability models available for application to financial risk modelling applications, and to partner in capacity building projects in developing countries.

1. Through its global public-private partnership between government institutions and private companies GEM has developed global coverage of earthquake hazard and risk⁶ 7. GEM's ground-up loss models, modelling tools and datasets are available for free under an open license or upon request for public-good applications.
2. Since 2020 GEM has started to make its models more readily available for financial risk/insurance purposes and has increasingly formatted its output for use on Oasis LMF.
3. GEM will work with the GRMA to leverage its global network of collaboration and modelling capability with developing countries to continue to build hazard and risk assessment capabilities for a wide range of disaster risk reduction applications.

g. **Workstream 2.4: Catalogue existing models and data**

- i. The IDF 'CatRiskTools' catalogue on the OasisHub web portal was developed by the RMSG to answer the question "What models and data exist and where are they?" (See <https://catrisktools.oasishub.co>.) There are currently entries showing metadata for 250 models and data sets. Although a powerful resource, CatRiskTools remained static in 2019-21 because of lack of resource.

⁶ <https://www.nature.com/articles/d41586-018-07705-2>

⁷ https://journals.sagepub.com/topic/collections-eqs/eqs-1-GEM_supplement/eqs

- ii. **Current progress and objectives for 2021:** *The focus in 2022 is to revise the operating model of CatRiskTools – to refresh its mandate and scope given changes in the risk analytics space since its original launch. The first priority will be to review its objectives and to plan a redeployment based on the outcomes of that, which would also include an adequate data curation and maintenance plan, and an updated catalogue of models.*

5. Resourcing

- a. Table 1 describes RMSG’s 2022 funding picture:

Secured private sector funding	
WTW 2023 contribution	Assumed now to be complete/ discontinued
Company contributions under MoUs with IDF:	
Year 1: (Paid in 2021)	\$700k
Year 2: (Invoiced in 2022)	\$600k
Year 3: (Projected for work to be done in 2024)	\$800k
Public sector funding for GRMA country projects	
GRMA: operational costs	EUR1.5m
GRMA risk analytics assistance fund	EUR19.5.0m
Other	
Potential for further G7/G20 donors to join programme	Unknown

6. Summary of next steps

- a. Next steps for **RMSG overall:**

- i. Continuous connection of RMSG’s workstreams with the programmes of other IDF working groups, with emphasis on joint work in selected countries.
- ii. Support to IDF events and representation of IDF in external fora where risk understanding is a major theme (eg REAP).
- iii. Introduce RMSG’s strategy to recently joined private sector members of the IDF Steering Committee, with a view to signing Memoranda of Understanding.
- iv. Continuous support to key partner programmes as shown at Workstreams 2.2, 2.3 and 2.4.

- b. Next steps for **Theme 1 (Open modelling technology and standards)** are:

- i. Facilitate public sector and humanitarian input to definition and governance of the Oasis technical improvement programme and related standards. (Including input from Start Network, ADB, GFDRR...).
- ii. Facilitation of IDF project funding from RMSG account.
- iii. Continue work of ITWG steering group and CRC to deliver transformation tools. The roadmap will plot further data format pairings, ensuring

consistency of priorities and investment between US and European initiatives.

- iv. Continued development of the OED standard, in conjunction with GFDRR and the Risk Data Library.

c. Next steps for **Theme 2 (Delivery of content and capability)** are:

i. **GRMA:**

1. Intensive engagement with ministries of interested countries, alongside relevant development partners and insurance supervisors.
2. Close coordination with Global Shield programme activity, particularly with reference to Global Shield Pathfinder countries
3. Close coordination with V-20, in particular countries negotiating and developing Climate Prosperity Programmes.
4. Advocacy with further donors to bring the programme to scale

ii. Support to the **Global Resilience Index Initiative**, through:

1. Connection to insurance industry models and data.
2. Advocacy and guidance on use of Oasis and Open Data Standards.
3. Connection to the GRMA programme.
4. Provision of Secretariat services.

iii. Development and management of *ad hoc* projects outwith the BMZ funded programme.

iv. Tripartite agreement:

1. Reinforcement of Standards and Best Practices with consortia member companies and their partners.
2. Agreement of RMSG services with consortia and confirmation in project plans submitted to ISF.

v. Support to scoping and delivery of UNDP country programmes beyond Tripartite Agreement, as shown in Workstream 2.4.

vi. Support to humanitarian sector programmes. The most advanced engagement will most likely remain with the Start Network.

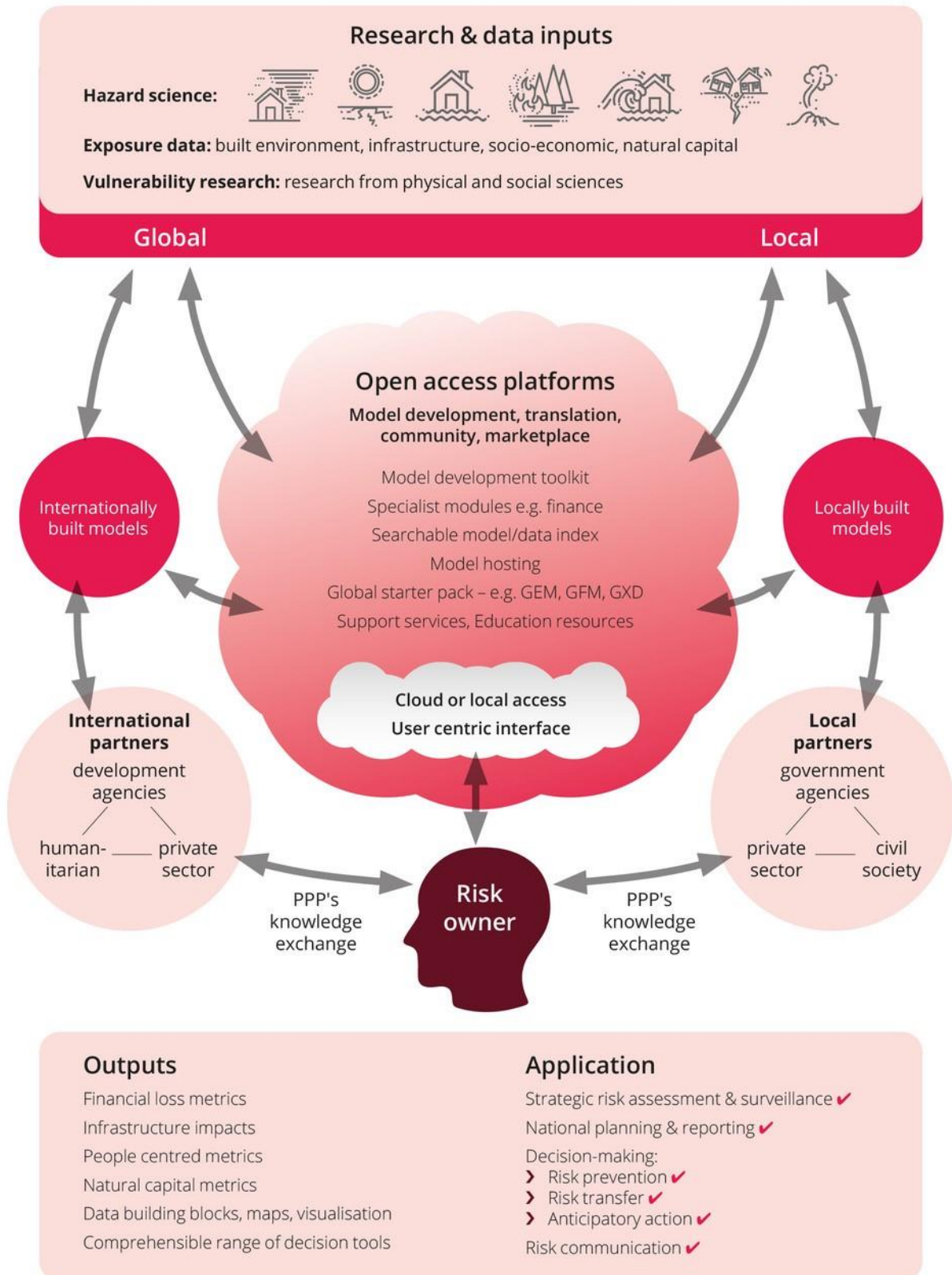
vii. Scoping of a long-term projects of potential global benefit, including vulnerability research

viii. CatRiskTools: Functional enhancements, improving updating process, addition of further models to catalogue, promotion of this resource to partners.

Annex A:

Optimised open risk modelling ecosystem in the development context

(From the IDF Development Impact of Risk Analytics report)



Annex B:
Summary of the Global Resilience Index Initiative

