

Emerging Food Safety Issues

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Changes in food safety environment

- The unexpected
 - Intentional and non-intentional food safety incidents
- Globalisation of trade
 - Volume and diversity of traded food
- Travel and tourism is increasing
- Climate change
- Bio-energy production
 - Competition for land and water
- “Industrialisation” of agriculture and animal production



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Changes in food safety environment

- New food and agriculture technologies
- Increasing antimicrobial resistance in bacteria
- Changes in virulence of bacteria and viruses
- Dietary patterns change
- Food preparation preferences change
- Functional Foods
 - Blurring of boundary between foods and drugs
- More sensitive analytical methods
 - “new” environmental contaminants
- Availability of knowledge via Internet
 - Food as vector for terrorism



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ESCO project on Emerging Risks

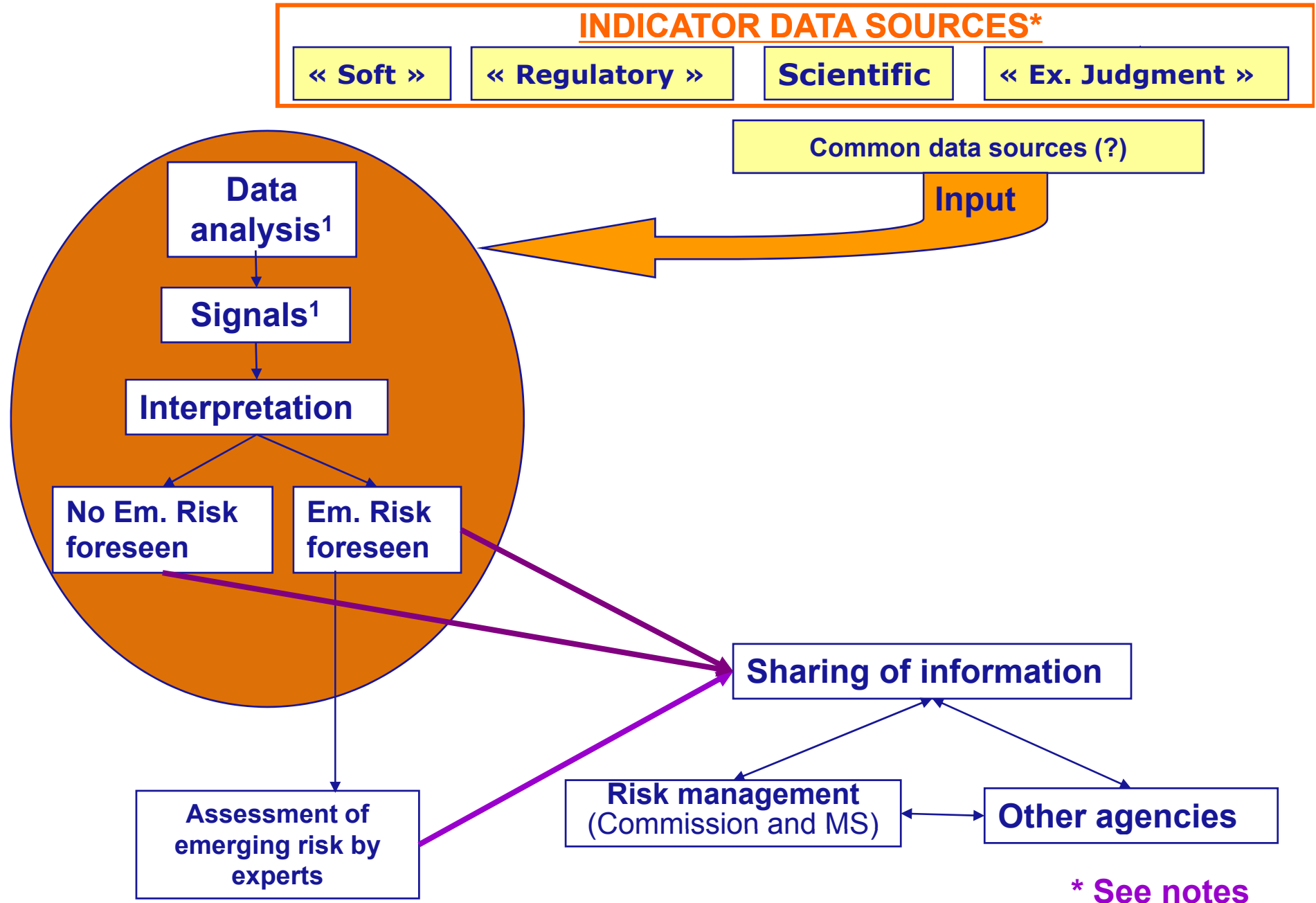
- **23 experts from 16 countries (including USA)**
- **Since 2007**
 - 12 meetings organized**
 - 2 plenaries
 - 9 subgroup
 - 1 steering committee
- **Major achievements in the preliminary report (EFSA/EMRISK/047)**

Mandate of the ESCO WG

(Adopted by EFSA 2007)

- 1. Define and list priority indicators**
- 2. Develop procedures and best practices for data collection and analysis**
- 3. Identify key sources of information**
- 4. Propose methodology and procedures to establish a network to exchange information**
- 5. Review recently completed and ongoing projects and recommend research activities**

General procedure for emerging risk identification



* See notes

¹ including relevant single events

“New” chemical hazards

- Acrylamide and **other substances** formed during cooking
- Need for quantitative risk assessment
- Interim measures to reduce exposure while more data are generated on which to base a risk assessment
- Food industry is developing ways to reduce levels of acrylamide in processed foods
- Advice to consumers
- Challenges
 - risk assessment, management and communication



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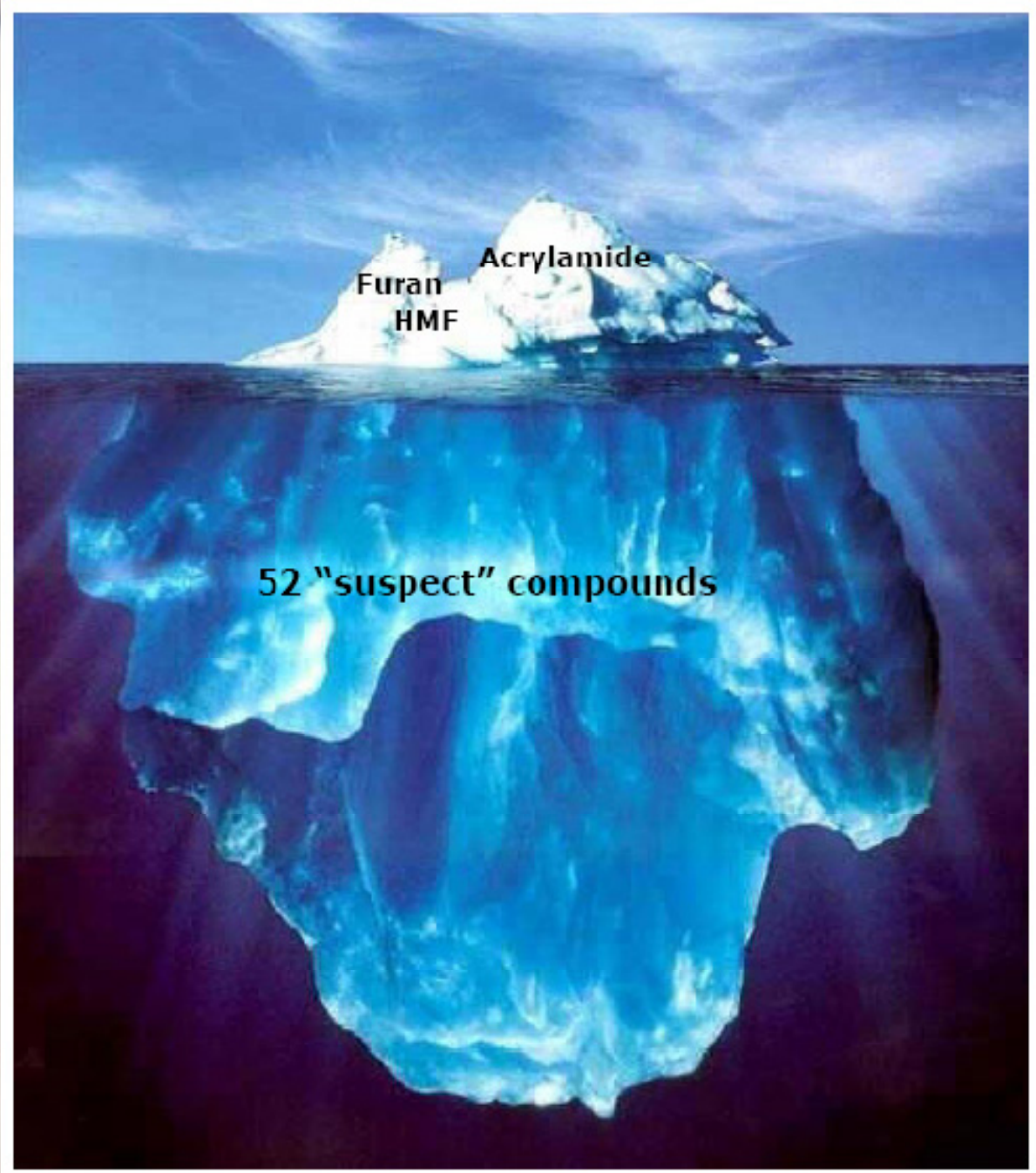
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Results obtained in HEATOX

6thFP involving 24 partners from 14 countries

- Compilation of a database
 - 820 compounds known to be formed in the Maillard reaction or through Lipid Oxidation
- Toxicity modelled using a number of integrated SAR systems
 - 54 compounds were predicted to be genotoxic and carcinogenic
 - Virtually no information on biological activity or exposure





Emerging issue?
Communication
challenge

Nanotechnology

- Food industry is rapidly exploring applications
 - smart packaging, nano-sensors, food processing equipment, food contact surfaces, veterinary drugs, pesticides, additives
- Challenge
 - protecting consumers while not stifling development.
 - Need to assess possible food safety risks before technology introduced
 - food irradiation, GMO
- EFSA-opinion
 - Assessments on a case by case basis
 - Possibility to analyse?



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Cooperation on risk assessment

- Strengthen cooperation between FAO/WHO, OIE, EFSA and other regional and national risk assessment bodies



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Antimicrobial resistance

- Series of FAO/WHO/OIE expert meetings
 - Codex and OIE guidelines on use of antimicrobials
- WHO has a list of antimicrobials critical for human medicine
- OIE has a list of antimicrobials critical for veterinary use
- Challenge: To reach agreement on the use of critical antimicrobials in both human and veterinary medicine



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Microbiological hazards

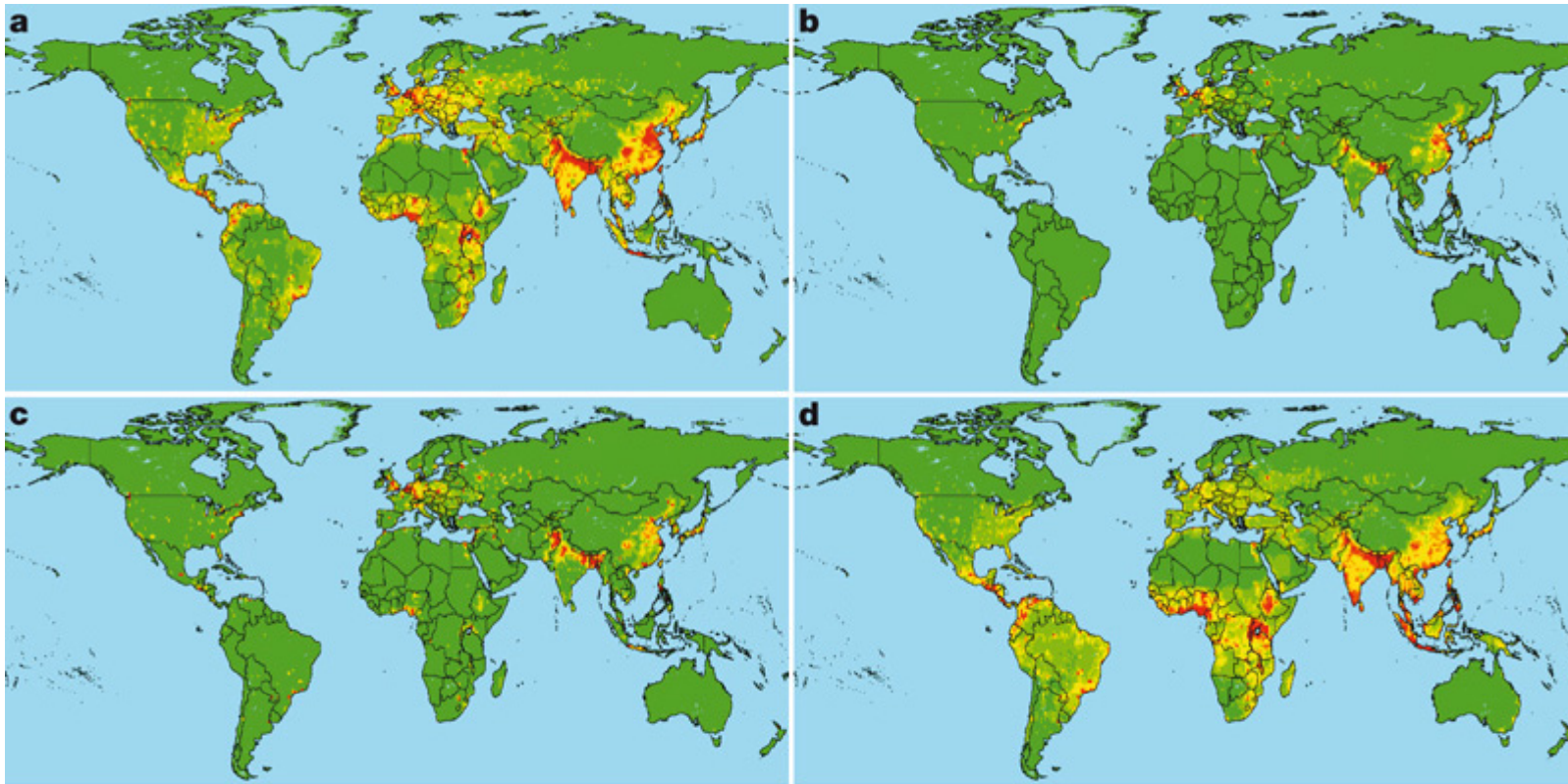
- Globalisation, increased trade and travelling
 - Rapid spread of “new” pathogenic bacteria, viruses
- Highly pathogenic avian influenza – hoping for the best, preparing for the worst.
- Very rapid, honest and complete reporting of outbreaks by all countries imperative if spread of the disease is to be contained



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- Maps for Emerging Infectious Disease events caused by
 - a/ zoonotic pathogens from wildlife
 - b/ zoonotic pathogens from non-wildlife
 - c/ drug-resistant pathogens
 - d/ vector-borne pathogens



Green (lower values) Red (higher values)

From: [Global trends in emerging infectious diseases](#)

Kate E. Jones, Nikkita G. Patel, Marc A. Levy, Adam Storeygard, Deborah Balk, John L. Gittleman & Peter Daszak
Nature 451, 990-993(21 February 2008)

Microbiological hazards: fresh produce

- Recommendation to consumers – “Eat more fruits and vegetables – they are good for your health!”
- *E.coli* O157 from lettuce and spinach. Salmonella from bean sprouts, almonds, cantaloupes. Typhoid from vegetables. Cyclospora from strawberries.
- Contamination due to
 - contaminated irrigation water
 - unhygienic practices by agricultural workers and food handlers
- Challenge
 - risk management, GAP, SOPs, clean water, enforcement, information to consumers



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Consequences of climate change

Consequences

- Increased risk of flooding
 - Contamination of agricultural land and drinking water sources with chemical and microbiological hazards from industry, mining, sewage, waste disposal, etc.
- Increasing temperatures
 - spread of pests and disease vectors, increased risk for mycotoxin formation due to mould growth

Challenge

- Foresee coming changes and be prepared to meet them



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Strengthening food control in developing countries

- Dual objectives
 - improve health in the country and opportunities for food exports and tourism
- Control at port of entry not effective
 - Import control moving offshore – exporting countries need to be able to demonstrate to potential importers that they have effective food control systems
- Challenge: To effectively support developing countries in improving their food control systems and infrastructure, a common interest for both developed and developing countries



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Enhanced participation of developing countries in Codex

- Large majority of Codex 175 Member Countries are developing countries.
 - Their more active participation in Codex work would benefit the countries themselves and ensure that Codex standards were established on a truly global basis
- Challenge
 - To get delegates to be more active in the Codex process and use the information, experience and contacts they obtain to improve food safety in their own countries and increase their food trade opportunities



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Balancing health benefits and risks

- Fortification of foods with folic acid
 - clear reduction in neural tube defects, but is there an increased cancer risk ??
- Benefits and risks with fatty fish
 - Fish fat and CVD vs Dioxins/PCB
- Benefits and risks with increased consumption of fruit and vegetables
- **Challenge**
 - Get toxicologists/microbiologists/nutritionists to reach consensus
 - Reach consensus on value of animal data vs human data
 - Develop decision models taking value based judgements into account



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Blurring of the boundary between foods and drugs

- **Challenge:** To assess health risks and evaluate health claims for foods and dietary supplements with “pharmacological effects” in a way not to differ from evaluation of drugs
- Monitoring both positive and negative health effects in man
 - Compare with experience of rare side effects of pharmaceuticals



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Communicating food-related risks

- Ideally, consumers should not have to worry about health risks when they buy food
- If they must worry, then they should at least worry about the most important risks
- Correct and complete labelling
- **Challenge:**
 - Understand consumers' perceptions of risks, perceived vs "real" risks
 - Be a trusted source of information
 - Communicate about risks and risk-related factors, including uncertainty, clearly and rapidly
 - Tell them what you know, tell them what you don't know and tell them now!



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Overweight and obesity

- Millions undernourished, at the same time millions overeating themselves into ill-health
- Growing physical inactivity.
- Balancing energy intakes and energy needs.
- Recommendations from different experts and in the media often contradictory – consumers confused and lose faith in experts
- Challenge
 - Agree on recommendations tailored to different groups and communicate effectively
 - Use different instruments to influence consumption.
 - Combine dietary and physical activity recommendations.



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Conclusions

We need to

- keep looking for emerging risks, and be more open and transparent about problems we find
- ensure that food operators take their responsibility for food safety
- strengthen international cooperation in assessing emerging and re-emerging food safety risks
- provide more support to developing countries to accelerate development of their food safety systems for mutual benefit
- improve our communication about food-related health risks and measures to manage them including the establishment of international and regional rapid alert systems



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