

# Analysis of the iF Design Trend Report 2024: A Strategic Guide for UX Designers

---

## 1.0 Executive Summary

This analysis distills the macro-level transformations shaping the future of design, as identified in the iF Design Trend Report 2024. It provides a high-level strategic overview for user experience (UX) designers, translating global societal shifts into actionable insights. In an era of profound change where business, technology, and policy converge, the role of design is expanding beyond the creation of discrete products to address complex, systemic challenges.

The report identifies six interconnected transformations that define the current landscape. The **Conscious Economy** reflects a shift from an economy of output to one of purpose, reshaping work through human-machine collaboration and a focus on employee wellbeing. **Human Digitality** signals a more balanced, humanized relationship with technology, driven by AI Companions and the need for enhanced cyber resilience. The **Co-Society** transformation addresses societal fragmentation by championing plurality and inclusion through collaborative design methodologies. The **Mindshift Revolution** captures a re-evaluation of societal values, giving rise to brand activism and a deeper awareness of justice and intersectionality in design. **Glocalization** describes the interplay between global trends and local cultures, demanding designs that are culturally resonant and context-aware. Finally, the **Eco Transition** frames the urgent, overarching need to move toward a sustainable, ecosystemic society through circularity, climate adaptation, and regeneration.

These transformations signal a pivotal moment for the design profession. The role of the UX designer is evolving from a creator of user-centric interfaces to a facilitator of ethical, inclusive, and sustainable systems. The challenges ahead are no longer confined to usability and aesthetics but extend to fostering psychological safety, promoting democratic dialogue, and contributing to planetary health. This document serves as a guide to navigating this new terrain, equipping designers with the strategic foresight needed to create meaningful and responsible experiences for the future.

## 2.0 Detailed Content Analysis of Societal Transformations

### 2.1 The Conscious Economy: Reshaping Work and Technology

This section analyzes the transformation of the workplace, driven by workers' changing needs and the profound integration of Artificial Intelligence. This shift from a performance-oriented society to a "conscious economy" is of critical strategic importance, as it redefines the very nature of productivity, collaboration, and employee wellbeing, presenting designers with the opportunity to shape the next generation of work tools and environments.

The core of the **Conscious Economy** is the move from an "economy of output to an economy of purpose." This transformation is propelled by key drivers including digital networking, which has

created new models for cooperation, and demographic shifts toward an aging workforce, which brings employee health—both mental and physical—to the foreground. Companies are increasingly recognizing that a healthy, supportive work environment directly impacts satisfaction, motivation, and productivity.

A central element of this new economy is **Human-Machine Teamplay**, defined as a productive interplay that utilizes the potential of both human and artificial intelligence equally. Rather than replacing human creativity, AI is being positioned as a powerful collaborator. Sentiment data reveals a significant and dynamic shift in how workers perceive AI's role, moving from skepticism to an appreciation of its augmenting capabilities.

Sentiment about AI's Impact on Work	2018	2023	Change
AI provides more insight for decisions	35%	52%	+17 pts
AI has helped me develop new skills	17%	26%	+9 pts
AI can be shared with colleagues and stand-ins	60%	61%	+1 pt
AI requires more specific instructions from me	40%	30%	-10 pts
AI will replace my job	21%	14%	-7 pts

For designers, AI is particularly promising in several key areas:

- **Consulting Role:** AI can be fed information about various stakeholders to provide appraisals of designs from multiple perspectives.
- **Generative Design:** Software can generate countless design options based on set parameters, accelerating ideation.
- **Inspiration and Moodboarding:** AI-powered tools can quickly assemble moodboards tailored to specific design tasks.
- **Project Management:** AI can automate administrative tasks, freeing designers to focus on core creative skills.

As Ziyuan Zhu of IDEO notes, designers must understand *how* AI works to fully leverage its capabilities. The focus is shifting from simple execution to "augmented" design, where AI serves as a catalyst for creative rigor. This requires championing ethical considerations by design, asking critical questions about potential harms and societal inequality before they become embedded in the technology we create. Just as AI redefines our professional collaborations, it is also fundamentally altering the intimacy of our digital interactions in daily life.

## 2.2 Human Digitality: Humanizing Technology

This section introduces **Human Digitality**, a transformation that marks an evolution from "disruptive euphoria" toward a more mature and balanced relationship with digital systems. This shift is crucial for UX designers, who are tasked with creating the next generation of human-machine interactions that are not only intelligent but also responsible, secure, and human-centric.

The core principles of this transformation are the rise of **AI Companions** and the increasing importance of **Cyber Resilience**. AI Companions are moving beyond simple voice assistants to become partners that offer creative inspiration, emotional support, and personalized coaching. This evolution is driving a fundamental change in interaction design.

The reliance on graphical user interfaces is diminishing as AI's contextual understanding enables more natural, language-based interactions—a trend described as "**Text-To-Everything**." This shift presents a key design challenge: finding the right balance between a human-like appearance and a technoid interface for AI companions. An overly human representation risks perpetuating harmful stereotypes—for example, casting an assistance system as a beautiful, demure woman—while a purely functional interface may fail to create the emotional connection needed for certain applications.

Simultaneously, as our world becomes more interconnected, it also becomes more vulnerable. The report emphasizes the role of designers in enhancing **Cyber Resilience**. This involves designing for "scam resilience" to protect users and adopting a guiding principle of "**Less is more**" regarding data. By minimizing the collection and processing of critical user data, designers can make products inherently less attractive to cybercriminals and build a more trustworthy digital ecosystem. As our digital lives become more human-centric and relational, so too must our societal structures become more collaborative and inclusive to reflect this change.

## 2.3 Co-Society: Designing for Plurality and Inclusion

The **Co-Society** transformation directly addresses the societal fragmentation and polarization that characterize our modern world by strengthening togetherness through design. This represents a clear mandate for designers to move beyond individual user needs and create products, services, and spaces that are broadly accessible, foster constructive interaction, and heal social divisions.

The core concept is to counteract polarization by actively promoting plurality, cooperation, and inclusion. This involves two key principles:

1. **Co-Design:** A collaborative creative process that actively involves all stakeholders—from end-users to community members—in the development of solutions. This approach is based on the idea that those affected by a design hold valuable knowledge and unique perspectives, leading to more relevant and effective outcomes.
2. **Inclusive Design:** This approach aims to reduce social, functional, and physical barriers by considering the full spectrum of human diversity as a starting point. The **Inclusive Microsoft Toolkit** provides a powerful framework for this, illustrating how needs can be **Permanent** (e.g., a person with one arm), **Temporary** (e.g., an arm injury), or **Situational** (e.g., a new parent holding a child). By designing for all three, we create solutions that benefit everyone.

This transformation also elevates the mission of "**Mending Public**," where design takes on the responsibility of healing social media and creating a new digital agora. This is achieved by designing "**Third Places**"—public meeting spots, both physical and digital, that bring people from various backgrounds together. Ranging from a neighborhood park to a well-moderated online forum, these spaces are essential for building social cohesion. However, to create a true Co-Society, the collaborative methods of Co-Design and Inclusive Design must be paired with the deep self-reflection and advantage awareness demanded by the next great transformation.

## 2.4 Mindshift Revolution: A New Era of Wellbeing and Values

The **Mindshift Revolution** describes a period of profound societal, moral, and spiritual change that is reclassifying power dynamics and reordering our collective values. For designers, this transformation is significant as it signals the rise of a new, socially conscientious consumer zeitgeist, where authenticity, justice, and purpose are paramount.

This revolution is characterized by several core concepts. The increasing visibility of diverse life realities has exposed structural inequalities, leading to a focus on **Plurality in Design** and social justice. The concept of "**intersectionality**"—the understanding that forms of discrimination can overlap—has become central. This demands that designers practice "**advantage awareness**," using tools like the "**Wheel of Privilege**" to recognize their own biases and create more just and equitable solutions.

This shift in values is also reshaping the relationship between companies and consumers, giving rise to **Brand Activism**. This refers to companies taking an authentic, active stance on social, political, or environmental values that goes beyond conventional marketing. Trailblazing companies like **The Body Shop** (campaigning against animal testing) and **Patagonia** (donating all proceeds to environmental projects) demonstrate that successful brand activism must be followed by consistent corporate action.

Finally, the report identifies a trend toward **Neo-Spirituality**, where a move away from organized religion has not diminished spiritual needs. Design is giving new forms to these needs through routines, rituals, and ceremonies, particularly during life's "threshold moments" like birth, marriage, or death. This trend brings a critical challenge: designers must distinguish between "**Cultural Appropriation**," which exploits elements from marginalized cultures, and "**Cultural Appreciation**," which is based on respectful, equitable exchange. This profound re-evaluation of internal values and identity is mirrored by an external re-evaluation of our relationship with place, forcing a new synthesis between global systems and local cultures.

## 2.5 Glocalization: Connecting Global and Local

**Glocalization** is the phenomenon where global trends and structures revive and merge with local practices, knowledge, and traditions. This transformation is strategically important for designers, challenging them to create products, brands, and experiences that are culturally resonant and relevant in diverse markets, moving beyond a one-size-fits-all approach.

The report posits that globalization is not leading to homogenization but rather to a new, dynamic interplay between global systems and local networks. This interplay is shaped by three key forms of migration, each presenting unique design opportunities:

1. **Forced Migration:** Responding to conflict, economic hardship, or ecological crises.

2. **New Nomadism:** A lifestyle adopted by a mobile elite of knowledge workers who can work from anywhere.
3. **Transformative Travel:** A shift in tourism toward more authentic, sustainable, and reciprocal engagement with local cultures.

Forced migration, in particular, has given rise to the concept of "**Arrival Cities**," urban neighborhoods that serve as platforms for integration. Design plays a crucial role here, shaping elements like accessible and affordable living/commercial space and creating opportunities for social networking that help new arrivals find their footing.

In this glocalized world, brand design acts as a "**cultural interpreter**." A failure to understand local context can lead to significant missteps, and it is here that the principles of glocalization intersect with the ethics of the Mindshift Revolution. The mandate is to practice the respectful **Cultural Appreciation** needed to be an effective interpreter, avoiding the pitfalls of **Cultural Appropriation**. The classic example of the diaper brand **Pampers**, which initially failed in Japan because its packaging featured a stork—a Western childbirth metaphor non-existent in Japan—illustrates the critical need for deep cultural research. This tension between global and local is perhaps most acute in the shared, planetary challenge of the ecological transition.

## 2.6 Eco Transition: Driving the Climate Transition Forward

The **Eco Transition** is the all-encompassing transformation toward a holistic, ecosystemic society. Its strategic importance cannot be overstated, as it provides the foundational context for all future design work. Guided by principles of sustainability, decarbonization, and regeneration, this transition is not a trend but a fundamental reorientation of our relationship with the planet.

The report outlines three major tasks that guide this transition, each presenting a clear call to action for designers:

1. **Design for Circularity:** This involves fundamentally restructuring production and consumption to establish a circular economy. The core principles, as defined by the Ellen MacArthur Foundation, are to **eliminate pollution and waste, circulate products and materials, and regenerate nature**. This is driving innovation in **Living Materials** and **Biodesign**, where organisms like fungi and algae are used to create sustainable alternatives.
2. **Design for Climate Adaptation:** As the effects of climate change become more pronounced, we must make our living areas more resilient. This task involves developing adaptive strategies for cities and infrastructure. A key example is the "**Sponge City**" concept, which uses green spaces, unsealed surfaces, and water reservoirs to absorb heavy rainfall and mitigate the effects of both floods and heatwaves.
3. **Design for Regeneration:** This is the most ambitious task, moving beyond simply sustaining the current state to actively promoting the recovery of damaged ecosystems. **Regenerative design** is a holistic approach where human activity contributes positively to the environment. This can be seen in projects that reintroduce native flora, restore water cycles, or create buildings that function as living ecosystems themselves.

These six interconnected transformations provide a comprehensive map of the challenges facing UX designers. However, the Eco Transition is unique. It marks a fundamental break from the paradigm of purely human-centered design that has dominated our field for decades. It demands a systemic shift to an ecosystem-centered approach, establishing a new foundational logic upon which all other design work must be built.

## 3.0 Key Insights for UX Designers

This section extracts the most salient and actionable insights from the trend analysis, tailored specifically for the practice of UX design. It translates broad societal transformations into concrete principles, methods, and considerations for daily work.

### Design Principles and Methodologies

- **Embrace Collaborative Methods:** The shift toward a **Co-Society** demands a move toward collaborative methodologies like **Co-Design**. This means actively involving a diverse group of stakeholders, including end-users and community members, from the earliest stages of the design process to create solutions that are more relevant, equitable, and effective.
- **Adopt Inclusive Design as a Default:** The mandate for **Inclusive Design** is no longer a niche requirement but a core competency. Designers must create experiences that are accessible to all, considering **permanent** (e.g., blindness), **temporary** (e.g., laryngitis), and **situational** (e.g., a distracted driver) impairments across the senses of touch, sight, hearing, and speech.
- **Move Toward Regenerative Frameworks:** The **Eco Transition** calls for a new mindset that goes beyond human-centeredness. The **Symbiotic Design Process** is a future-facing framework that positions humans as part of nature, not separate from it. This ecosystem-centered approach prioritizes resilience, biophilia, and biomimicry.

### User Research Findings and Implications

- **Leverage AI for Deeper Insights:** The rise of Human-Machine Teamplay offers new tools for research. **AI-based personas**, created from datasets, interviews, and survey responses, can be queried throughout the design process for rapid feedback. AI can also assist in analyzing large amounts of user data to identify patterns and insights at scale.
- **Apply an Intersectional Lens:** To design for a pluralistic society, research must adopt an **intersectional perspective**. This means understanding how different forms of discrimination and privilege (based on race, gender, ability, age, etc.) overlap and create complex, multi-dimensional user experiences.
- **Prioritize Local Cultural Context:** **Glocalization** underscores the risk of cultural misinterpretation. User research must go beyond language translation to investigate local metaphors, symbols, and cultural norms to ensure that design elements are respectful and effective in different contexts.

### Usability Considerations

- **Design for Conversational Interfaces:** **Human Digitality** signals a fundamental shift from screen-based graphical interfaces to voice and language-based interactions ("Text-To-Everything"). This requires a new approach to intuitive design, focusing on natural conversation flow and contextual understanding for **AI Companions**.
- **Use WCAG 2.0 as a Foundational Checklist:** The **Web Content Accessibility Guidelines (WCAG) 2.0** provide a robust, internationally recognized checklist for creating accessible digital "third places." Key principles like ensuring content is **Predictable**, **Adaptable**, and **Keyboard Accessible** are essential for usability.

### Accessibility Requirements

- **Support a Wide Range of Needs:** The Co-Society chapter highlights the need for specific accessibility features like **sign language avatars**, color-blind filters, real-time captioning, and voice-customized controls to serve users with diverse impairments.
- **Design for Temporary and Situational Impairments:** Accessibility is not just for permanent disabilities. A user with laryngitis (temporary) or a bartender in a loud environment (situational) has a temporary need for non-verbal interaction. Good design accounts for this entire spectrum.

## Best Practices and Recommendations

- **Embed Ethics into the AI Design Process:** As championed by Ziyuan Zhu of IDEO, it is critical to integrate ethical considerations into the AI workflow. This involves proactively asking whether a new technology could cause harm or contribute to societal inequality.
- **Foster Psychological Safety:** The "Healthy Work" section shows that "psychological safety" leads to massive increases in productivity, dedication, and collaboration. Designers should advocate for and help create work environments where open communication, feedback, and experimentation are encouraged.
- **Adopt a Circular Design Mindset:** Designers should focus on principles of the circular economy. This includes thoughtful material selection, designing for reusability, and leveraging tools like **Digital Product Passports (DPPs)** to track an item's lifecycle and composition.

## Common Pitfalls to Avoid

- **Perpetuating Stereotypes with AI:** The design of humanoid **AI Companions** carries a significant risk of reinforcing harmful societal stereotypes, particularly regarding gender and race.
- **"Woke Washing":** Brand activism must be backed by authentic and consistent corporate action. Stating values without demonstrating them in practice can damage brand credibility.
- **Cultural Appropriation:** When drawing inspiration from other cultures, designers must avoid unauthorized or exploitative use of sacred symbols or practices. The goal should be respectful **Cultural Appreciation** based on equitable exchange.
- **Excessive Data Collection:** In the pursuit of personalization, it is easy to collect unnecessary user data. This increases cybersecurity risks and violates the "less is more" principle of **Cyber Resilience**.

## 4.0 Practical Application Guide

This section translates the high-level insights from the iF Design Trend Report into a concrete, tiered action plan. It provides a roadmap for our team to methodically integrate these future-focused trends into our current and future workstreams.

### 4.1 Immediate Actions (This Week)

- **Audit an existing product using the WCAG 2.0 checklist** provided in the "Co-Society" section of the report. This will help identify low-hanging fruit for immediate accessibility improvements in areas like text alternatives, color contrast, and keyboard navigation.
- **Experiment with generative AI tools** for tasks like moodboarding, image generation, or simulating stakeholder feedback. Using the "AI tools for designers" list as a guide, we can assess their potential to accelerate our early-stage creative process.

- **Review the five measures for reducing workplace stress** from the "Healthy Work" section (promoting work-life balance, open communication, etc.) and select one actionable principle to consciously implement in team meetings and interactions this week.

## 4.2 Short-term Initiatives (1-3 Months)

- **Plan a pilot project incorporating Co-Design principles.** Select a complex user problem and deliberately involve stakeholders from outside the design and product teams (e.g., support, sales, and end-users) from the very beginning of the process to foster shared ownership and generate richer insights.
- **Schedule a team-wide workshop on ethical AI design.** Use the principles from IDEO's collaboration with Ethiqly, as described by Ziyuan Zhu, as a discussion starter to define a preliminary set of ethical guidelines for how we approach AI in our products, focusing on mitigating potential harms like bias and stereotyping.
- **Develop a set of "glocal" design principles** for a product that serves an international market. Choose one specific local culture and conduct focused research to adapt UI elements, symbols, or feature sets to be more culturally resonant and avoid misinterpretation.

## 4.3 Long-term Strategy (3-12 Months)

- **Integrate Circular Design principles into the product development lifecycle.** For any work involving physical products, establish a formal process for evaluating material choices, disassembly, reusability, and end-of-life considerations. For digital products, focus on reducing the energy footprint.
- **Pursue the creation of "hybrid third places" within our digital products.** Identify communities within our platforms and strategically design features that foster constructive, inclusive community engagement, build social cohesion, and actively reduce polarization.
- **Cultivate a culture of "psychological safety."** Work with leadership to implement and measure initiatives that encourage open feedback, learning from failure, and transparent collaboration, citing the report's data on its direct link to increased productivity, dedication, and innovation.

## 5.0 Case Studies & Examples

This section provides concrete examples from the iF Design Trend Report to illustrate the successful implementation of the key trends discussed. Each case study demonstrates how a forward-thinking design approach can address complex societal challenges.

- **Project INKLusion (Samsung)** This project exemplifies a corporate commitment to **Inclusive Design**. Samsung collaborated with internal diversity, equity, and inclusion leaders to create the "INKlusion" strategy and guidebook. This initiative empowers Samsung's designers to view diversity not as a constraint but as a catalyst for innovation, infusing inclusivity into their core mindset and design processes.
- **Enghaveparken (Copenhagen)** This park is a world-class example of **Design for Climate Adaptation**. The project transformed a public park into Copenhagen's largest climate project, featuring a massive underground water reservoir capable of holding 22,600 cubic meters of water. During heavy rain, the park protects the surrounding city from flooding; in

dry weather, it remains a vibrant green space for recreation, demonstrating how resilience can be integrated seamlessly with urban quality of life.

- **IKEA's Localized Campaigns** IKEA provides a clear case study in effective **Glocalization** and branding. In one campaign, it leveraged the local Hokkien dialect in Singapore to create humorous and relatable connections between local phrases and its products. This localized approach shows a deep commitment to immersing the global brand in local culture, making it more resonant and accessible.
- **TECLA Eco-Sustainable Housing** Developed by MCA and WASP, TECLA is a pioneering prototype of **Regenerative Design**. It is a 3D-printed, eco-sustainable housing unit created from raw earth. The project integrates vernacular construction practices with modern technology to address housing emergencies while minimizing environmental impact. It demonstrates a future where buildings not only consume fewer resources but actively contribute to their environment.

## 6.0 Tools, Resources & Further Reading

This section compiles key software, frameworks, publications, and organizations referenced in the iF Design Trend Report, providing a starting point for deeper exploration.

### Software Tools & Platforms

- **Naya:** A collaborative 3D design platform.
- **AiDA (Design Assistant for Fashion):** A designer-led AI system for generating fashion collections.
- **Userlytics:** A platform for user data analysis and research.
- **Sentigem:** An AI model for sentiment analysis.
- **Brand24:** A tool for sentiment analysis of brands and products.
- **Equally AI:** A tool for identifying and solving accessibility issues.

### Frameworks & Methodologies

- **WCAG 2.0:** The Web Content Accessibility Guidelines, developed by W3C, for creating accessible web content.
- **Design Justice Network Principles:** A set of principles that rethinks design processes to center people who are normally marginalized.
- **Symbiotic Design Process:** A framework for Ecological Design Thinking that emphasizes the interconnected relationship between humans and nature.
- **Inclusive Microsoft Toolkit:** A framework for understanding permanent, temporary, and situational user needs.
- **Wheel of Privilege:** A conceptual tool for understanding how different aspects of identity can confer advantage or disadvantage.

### Cited Articles & Publications

- **Krippendorff, Klaus (2006):** *The semantic turn: A new foundation for design.*
- **Saunders, Doug (2010):** *Arrival City. How the largest migration in history is reshaping our world.*
- **Wahl, Daniel Christian (2019):** "How do you distinguish between regenerative and sustainable design?"

## Organizations & Communities to Follow

- **iF International Forum Design:** The organization behind the report, a global leader in design promotion.
- **The Future:Project:** The editorial partner for the report, specializing in societal transformations.
- **IDEO:** A global design company focused on human-centered design and social impact.
- **Ellen MacArthur Foundation:** A leader in promoting and developing the circular economy.
- **W3C (World Wide Web Consortium):** The international community that develops open standards for the web, including WCAG.

## 7.0 Questions for Team Discussion

These questions are designed to prompt a strategic team discussion, helping us apply the insights from this report to our specific context and work.

1. How can we apply the principles of **Human-Machine Teamplay** to our internal design tools and workflows to augment, not simply replace, our creative process?
2. Considering the pitfalls of designing **AI Companions**, what ethical guidelines or design principles should we establish now to prevent perpetuating stereotypes in our future products?
3. Based on the **Co-Society** section, which of our current user communities could be considered a "third place," and how might we better design it to foster constructive, inclusive dialogue?
4. How does the principle of "psychological safety" from the **Healthy Work** section apply to our user research practices? Are we creating safe and inclusive spaces for all participants to share honestly?
5. Looking at our product portfolio, where are the biggest opportunities to implement **Circular Design** principles, whether through digital changes (reducing energy footprint) or physical product considerations?
6. The report contrasts **Cultural Appropriation vs. Appreciation**. Can we identify an instance in our past work where we might have inadvertently crossed a line, and what steps can we take to ensure we practice respectful appreciation going forward?
7. What is one "immediate action" from the Practical Application Guide that each of us can commit to completing in the next sprint?

## 8.0 Glossary

This glossary defines key terms used throughout this analysis, as synthesized from the iF Design Trend Report 2024.

- **Brand Activism** The practice of companies actively taking a stance for social, political, or environmental values through authentic campaigns and actions that go beyond conventional marketing.
- **Co-Design** A collaborative creative process in which all stakeholders (including designers, clients, and end-users) are actively involved in the development of products, services, or systems.
- **Cultural Appropriation** The unauthorized, exploitative, or distortive adoption of expressions, artifacts, or knowledge from marginalized cultures, often commodifying them

out of context. The counter-term is Cultural Appreciation, which involves respectful exchange on an equal level.

- **Glocalization** The phenomenon where globalization merges with and revives local practices, knowledge, and traditions, leading to a dynamic interplay of global structures and local networks rather than homogenization.
- **Inclusive Design** A design approach that aims to take the needs of all people in a society into consideration, reducing social barriers and discrimination by viewing the full spectrum of human diversity as a starting point.
- **Intersectionality** The concept that different forms of discrimination (based on race, gender, class, ability, etc.) can overlap and combine to create complex and multi-dimensional experiences of privilege or disadvantage.
- **Regenerative Design** A holistic design approach that goes beyond sustainability (doing no harm) to actively contribute to the regeneration and restoration of damaged ecosystems and social systems.
- **Third Places** Public meeting spots—either physical or digital—that are separate from home (first place) and work (second place). They bring people from various backgrounds together, fostering social cohesion and community.
- **Transculturality** The concept that cultures are not homogenous or clearly delineated but are increasingly interwoven and mixed as a result of globalization, with lifeforms and practices crossing national boundaries.